HP StorageWorks

ESL E-Series Tape Library unpacking and installation guide

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ESL E-Series Tape Library unpacking and installation guide

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About this guide

This unpacking and installation guide provides information to help you:

- Unpack the library.
- Install the library.
- Load tape cartridges.
- Configure the library.

"About this Guide" topics include:

- Overview, page 7
- Conventions, page 7
- Getting help, page 9

Overview

This section covers the following topics:

- Intended audience, page 7
- Related documentation, page 7

Intended audience

This book is intended for use by authorized HP service personnel only.

Related documentation

In addition to this guide, HP provides corresponding information:

- *HP StorageWorks ESL E-Series pre-installation site survey*
- *HP StorageWorks ESL E-Series Tape Library users guide*
- *HP StorageWorks ESL E-Series Tape Library service manual*

Conventions

Conventions consist of the following:

- Document conventions, page 8
- Text symbols, page 8
- Equipment symbols, page 8

Document conventions

The document conventions included in Table 1 apply in most cases.

Table 1 Document conventions

Element	Convention
Cross-reference links	Blue text: Figure 1
Key and field names, menu items, buttons, and dialog box titles	**Bold**
File names, application names, and text emphasis	*Italics*
User input, command and directory names, and system responses (output and messages)	`Monospace font` `COMMAND NAMES` are uppercase monospace font unless they are case sensitive
Variables	*`<monospace, italic font>`*
Website addresses	Blue, underlined sans serif font text: http://www.hp.com

Text symbols

The following symbols may be found in the text of this guide. They have the following meanings:

⚠ **WARNING!** Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or death.

△ **CAUTION:** Text set off in this manner indicates that failure to follow directions could result in damage to equipment or data.

NOTE: Text set off in this manner presents commentary, sidelights, or interesting points of information.

Equipment symbols

The following equipment symbols may be found on hardware for which this guide pertains. They have the following meanings:

Any enclosed surface or area of the equipment marked with these symbols indicates the presence of electrical shock hazards. Enclosed area contains no operator serviceable parts.

WARNING: To reduce the risk of personal injury from electrical shock hazards, do not open this enclosure.

Any RJ-45 receptacle marked with these symbols indicates a network interface connection.

WARNING: To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

Any surface or area of the equipment marked with these symbols indicates the presence of a hot surface or hot component. Contact with this surface could result in injury.

WARNING: To reduce the risk of personal injury from a hot component, allow the surface to cool before touching.

Power supplies or systems marked with these symbols indicate the presence of multiple sources of power.

WARNING: To reduce the risk of personal injury from electrical shock, remove all power cords to completely disconnect power from the power supplies and systems.

Any product or assembly marked with these symbols indicates that the component exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manually handling material.

Getting help

If you still have a question after reading this guide, contact an HP authorized service provider or access our website: http://www.hp.com.

HP technical support

Telephone numbers for worldwide technical support are listed on the following HP website: http://www.hp.com/support/. From this website, select the country of origin.

NOTE: For continuous quality improvement, calls may be recorded or monitored.

Be sure to have the following information available before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Operating system type and revision level
- Detailed, specific questions

HP storage website

The HP website has the latest information on this product, as well as the latest drivers. Access storage at: http://www.hp.com/country/us/eng/prodserv/storage.html. From this website, select the appropriate product or solution.

HP authorized reseller

To find your nearest HP authorized reseller see the HP website: http://www.hp.com.

1 Unpacking the library

This chapter describes the following sections:

- Selecting an installation location, page 11
- Preparing for the installation, page 14
- Unpacking the library, page 15
- Setting up the library, page 24
- Storing the packaging materials, page 34

△ **CAUTION:** Only qualified HP field service engineers should unpack the HP StorageWorks ESL E-Series tape library.

Selecting an installation location

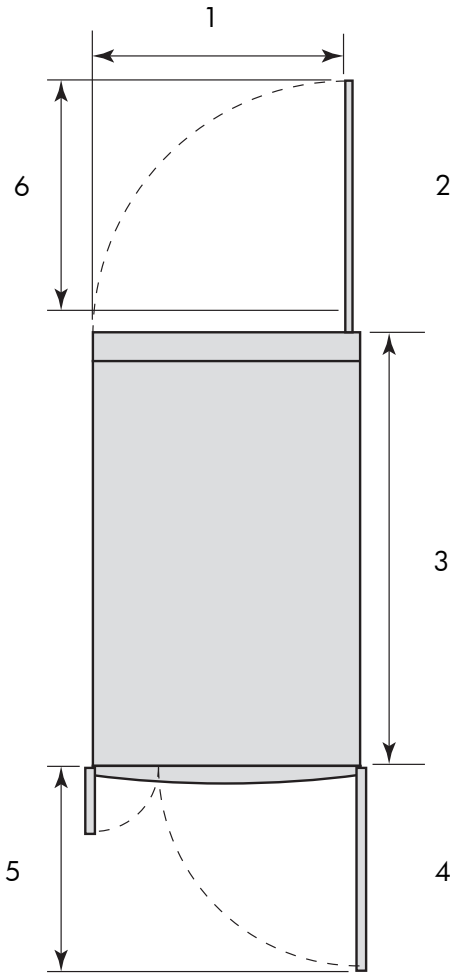
When choosing an installation site for the HP StorageWorks ESL E-Series tape library, consider the following requirements:

- Floor space, page 12
- Floor clearance, page 13
- Floor strength and inclination, page 13
- Power and grounding, page 13
- Environmental conditions, page 14

NOTE: These requirements are also described in the *HP StorageWorks ESL E-Series Tape Library users guide*.

Floor space

Figure 1 shows the minimum floor space required by a standalone library.



1 30 inches (76 cm.)
2 Back door
3 50 inches (127 cm.)
4 Front door
5 23 inches (58 cm.)
6 28 inches (71 cm.)

Figure 1 Floor space requirements

NOTE: If you are installing a Cross Linked (CLM) library, each cabinet must have appropriate space in front and in back of it, and it must have about 1 inch (2.5 cm) between it and its adjacent cabinet(s).

Floor clearance

The library has a floor clearance of 0.75 inch (19 mm). Place the library on a level, uncarpeted floor free of defects.

Floor strength and inclination

The floor at the installation site must be rated at 250 lb/ft^2 (1221 kg/m^2). This is sufficient to support a fully loaded library.

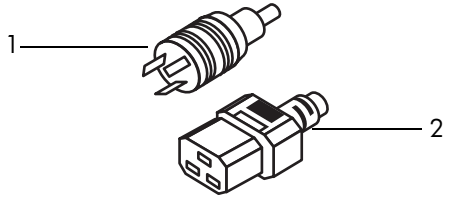
The floor must be level to within 0.25 inch (6.4 mm) over a 6 ft by 6 ft (1.83 m by 1.83 m) area.

Ventilation

Do not place the library directly over any cooling vents. Placing the library over cooling vents will result in an "out of temp" reporting in the library log.

Power and grounding

For the United States and Canada, one or two UL/CSA-certified power cords are supplied with each library. Each power cord uses a 14/3 SJT cord, a L6-20P plug, and an IEC-C320 C19 female connector (see Figure 2).



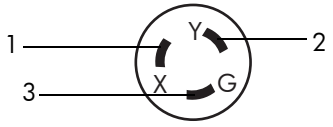
1 Connect to wall outlet plug NEMA L6-20P

2 Connects to library power supply connector IEC-C320 C19

Figure 2 Power supply cord

The library is rated 200-240V~, 50-60Hz.

Power requirements may require modification of the facility's existing power capabilities by a qualified electrician. The required wall outlet for the United States and Canada is rated at 250VAC 16 amps (see Figure 3).



1 Line x

2 Line y

3 Ground

Figure 3 Wall outlet (NEMA L6-20R rated 250VAC 20 amps)

Two dedicated wall outlets and a 20-amp circuit breaker are required to provide power to the library. Outside of North America, replace the supplied power cord(s) with harmonized 3 x 1.5 mm^2 power cord(s) that meet local requirements, and install the appropriate wall outlet.

WARNING! This product can only be used with an HP approved power cord for your specific geographic region. Use of a non-HP approved power cord may result in: 1) not meeting individual country specific safety requirements; 2) insufficient conductor ampacity that could result in overheating with potential personal injury and/or property damage; and 3) an unapproved power cord could fracture resulting in the internal contacts being exposed, which potentially could subject the user to a shock hazard. HP disclaims all liability in the event a non-HP approved power cord is used.

NOTE: More information on the electrical requirements is provided in the *HP StorageWorks ESL E-Series Pre-Installation Site Survey*.

WARNING! To avoid damage to the library and risk to personal safety, the library must be connected to a grounded electrical outlet.

Environmental conditions

The installation site must have the following environmental conditions:

- Humidity: 20%-80% noncondensing
- Temperature: 15°C to 32°C (59°F to 90°F)
- Altitude: sea level to 10,000 feet

These environmental conditions apply when the library is in operation.

NOTE: For additional library specifications (including environmental requirements during shipping and storage), see the *HP StorageWorks ESL E-Series Tape Library users guide*.

Preparing for the installation

This section describes the preparations needed before installing the library:

- Tools for installation, page 15
- Taking ESD precautions, page 15

Tools for installation

These tools are needed for unpacking and setting up the library:

- #2 Phillips screwdriver
- Snips for metal bands
- Safety goggles
- Ratchet with 3/8-inch socket (or 3/8-inch open-end wrench)
- Ratchet with 3/4-inch socket (or 3/4-inch open-end wrench)
- Ratchet with 7/16-inch socket (or 7/16-inch open-end wrench)
- Carpenter's level

NOTE: A 12-inch socket extension is recommended for removing the counter-weight shipping restraint.

Taking ESD precautions

CAUTION: Some components within the library contain static-sensitive parts. To avoid damaging these parts while performing installation procedures, always observe the following precautions.

- Keep the library powered off during all installation procedures.
- Keep the library power cord plugged into a grounded power outlet, except when working with AC electrical components.
- Avoid contact with power supplies, EMI filters, and AC electrical components while the library is connected to a power outlet.
- Use an antistatic wrist strap.
- Keep static-sensitive parts in their original shipping containers until ready for installation.
- Do not place static-sensitive parts on a metal surface. Place them inside their protective shipping bag or on an antistatic mat.
- Avoid touching connectors and other components.

NOTE: Dry climates and cold-weather heating environments have lower relative humidity and are more likely to produce static electricity.

Unpacking the library

This section explains how to unpack the library and move it to its final installation location. The library is shipped in packing materials designed to protect it from damage during transit. By following these instructions, you help ensure that the library will continue to be safeguarded after it arrives at the installation site.

The unpacking procedures include the following:

- Receiving the library, page 16
- Unpacking the library, page 16
- Moving the library to the installation site, page 24
- Setting up the library, page 24
- Storing the packaging materials, page 34

Receiving the library

Unpack the library as close to the installation site as possible. Inspect the shipping pallet and carton for damage that may have occurred during shipment. Report any damage to the shipper.

⚠ **WARNING!** Libraries weigh between 1,135 pounds (515 kg) and 1,459 pounds (662 kg), depending on their configuration. At least two people should move and install the library.

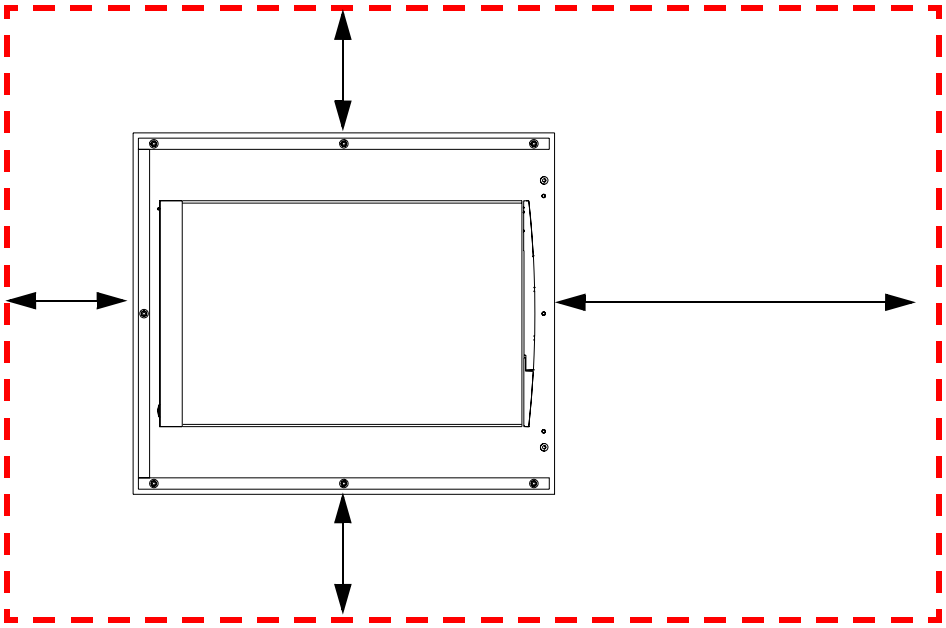
Unpacking the library

To unpack the library:

1. Note the side of the pallet where the library will be unloaded. The library may be unloaded from only the ramp side of the pallet (see Figure 4 on page 17).

2. Verify the minimum floor space requirements (see Figure 4).

NOTE: Figure 4 shows the minimum floor space required by the library at its unboxing site. Unboxing the library requires a minimum of 3 feet (91 cm) on all sides. The side used for the unloading ramp requires 10 feet (3.05 m). The minimum height required for unpacking the library is 85 inches (2.16 meters).

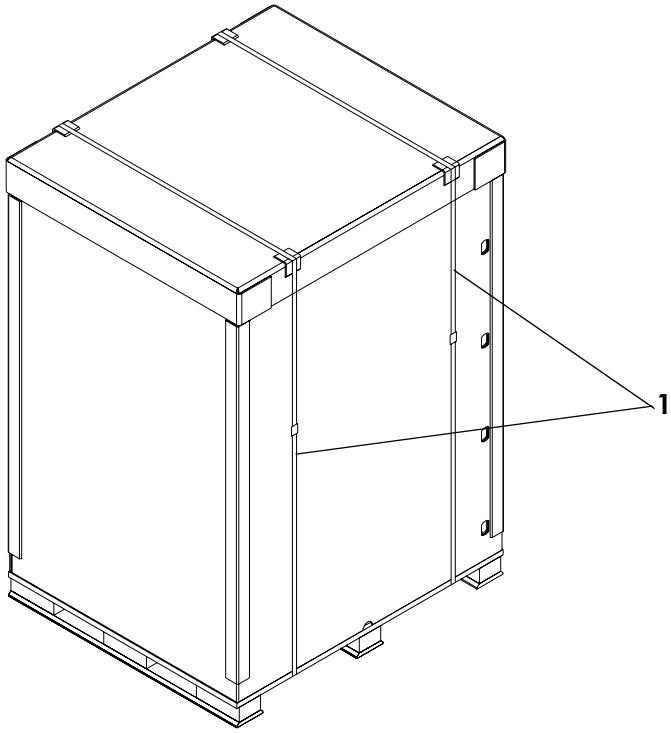


1 3 feet (91 cm.)
2 3 feet (91 cm.)
3 10 feet (3.05 m) – ramp side
4 3 feet (91 cm.)

Figure 4 Minimum floor space requirements - unpacking site

3. Cut the two steel bands that secure the library and packing material to the pallet (see Figure 5).

⚠ **WARNING!** The steel bands are under tension and may snap away when cut. Wear safety goggles when cutting the steel bands.



1 Steel bands

Figure 5 Removing the steel bands

4. Lift the cardboard box top cover straight up and remove it from the box (see Figure 6).

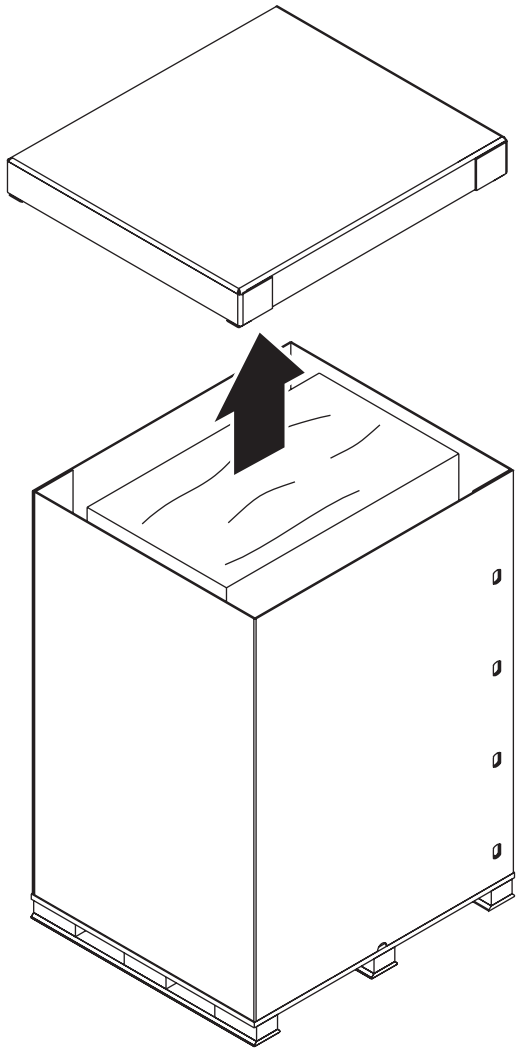
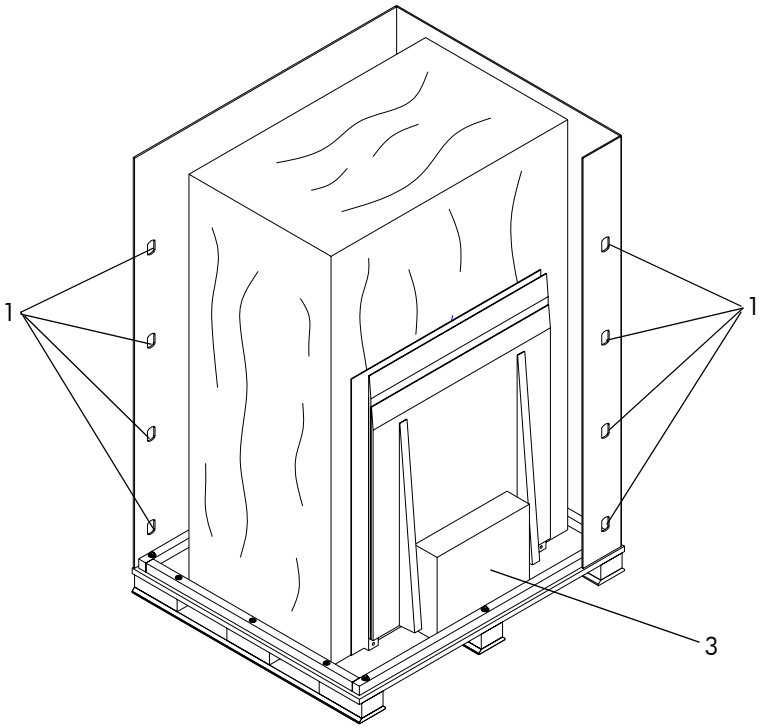


Figure 6 Removing the box top cover

5. Remove the eight cardboard box retaining clips and unwrap the cardboard box from around the library (see Figure 7).

NOTE: The cardboard box is in two sections.



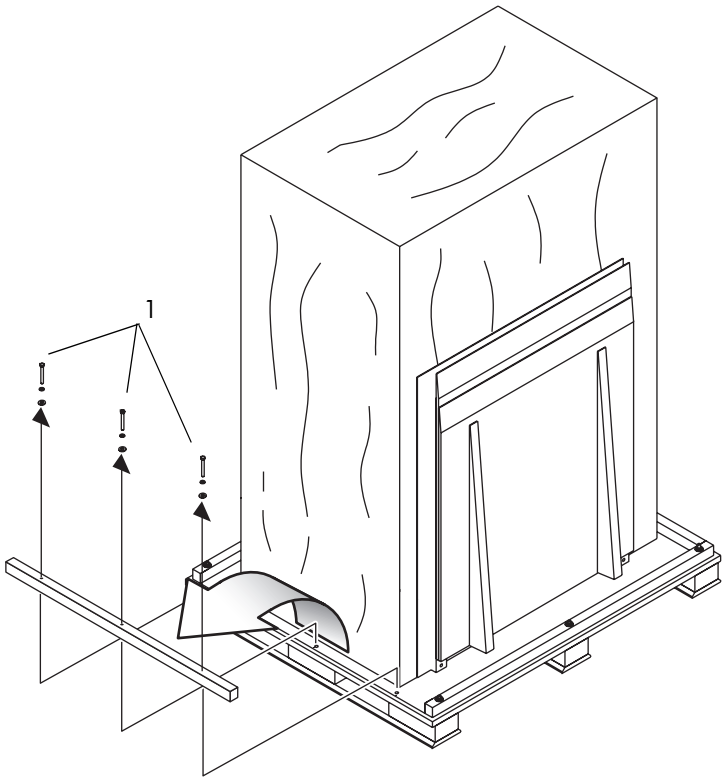
1 Retaining clips 2 Accessory kit

Figure 7 Removing the cardboard box

NOTE: Inspect the library for any damage that may have occurred during shipment. Pay special attention to areas behind any scuffs on the anti-static bag. If damage is detected, contact your authorized service representative.

6. Remove the accessory kit from in front of the pallet ramp (see Figure 7). Set it aside for later use at the installation site.

7. Remove the 3-3/8-inch hex head bolts, lock washers, and flat washers from the front rail of the pallet and set aside. Remove the front rail from the pallet (see Figure 8).

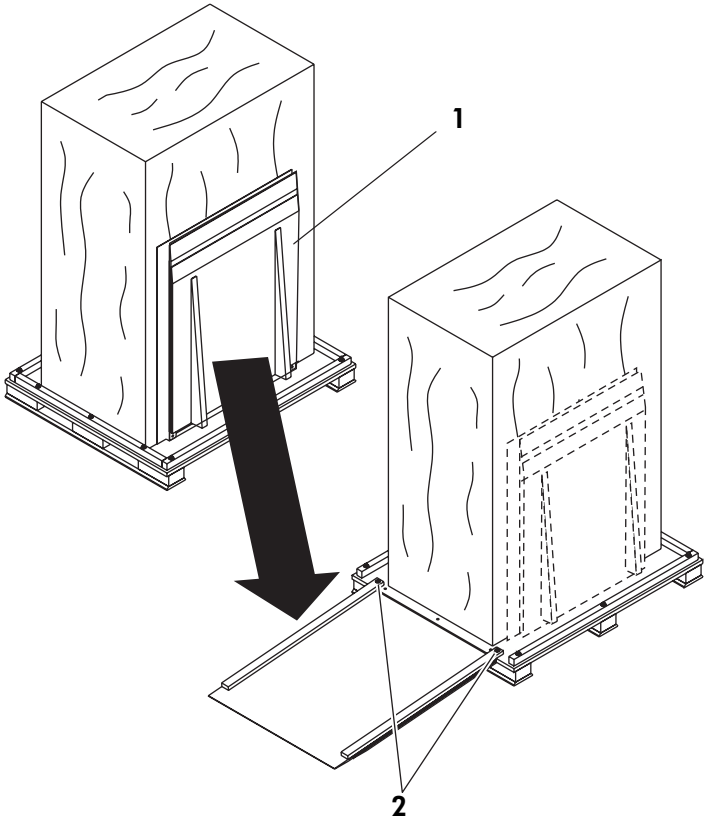


1 Bolts

Figure 8 Removing the front pallet rail

8. Cut the tape securing the ramp against the library.

9. Use two of the 3-3/8-inch hex head bolts, lock washers, and flat washers removed in step 7 to secure the ramp to the pallet (see Figure 9).

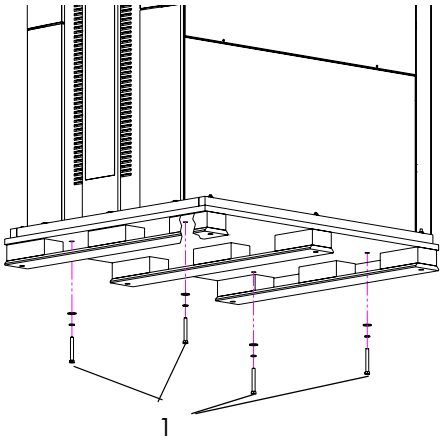


1 Ramp

2 Hex head bolts

Figure 9 Attaching the pallet ramp

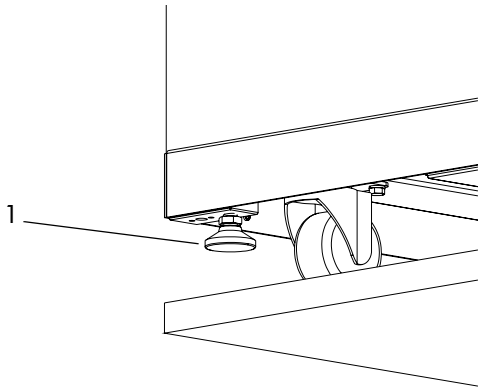
10. Remove the four 3/4-inch restraining bolts securing the library to the shipping pallet (see Figure 10). One restraining bolt is located near each leveling foot on the library.



1 Bolts

Figure 10 Removing the restraining bolts

11. Raise the leveling feet securing the library to the pallet (see Figure 11).



1 Leveling feet in raised position

Figure 11 Raising the leveling feet

Moving the library to the installation site

1. Map a route to the installation site.
2. Carefully roll the library down the ramp and guide it to the installation site (see Figure 12).

⚠ **WARNING!** Libraries weigh between 1,135 pounds (515 kg) and 1,459 pounds (662 kg), depending on their configuration. At least two people should move and install the library.

△ **CAUTION:** Be aware that the laptop tray may open up during this process. If so, return it to the closed position before continuing.

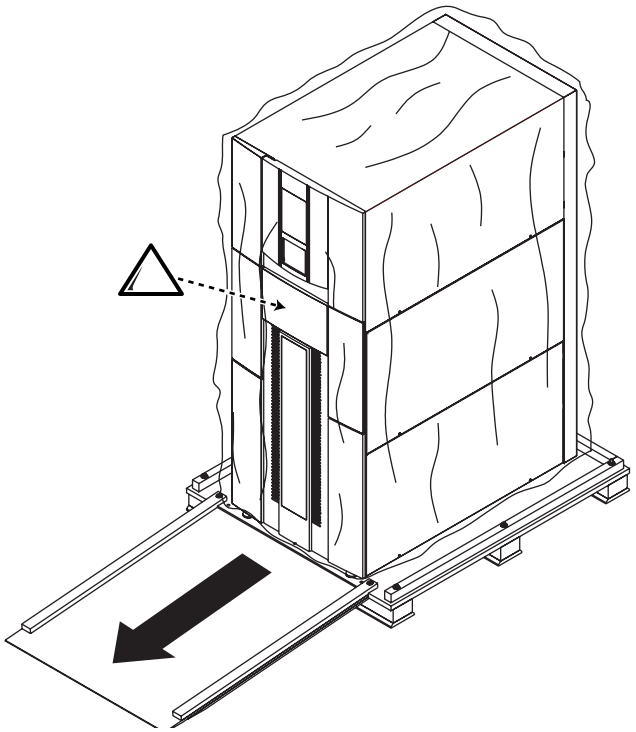
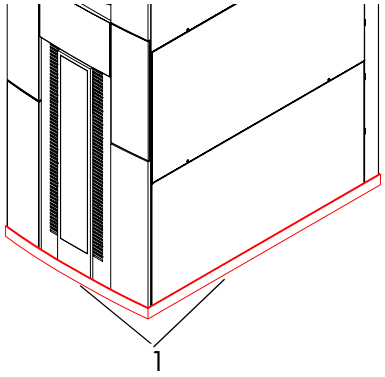


Figure 12 Rolling the library down the ramp

Setting up the library

1. Stabilize the library by lowering the leveling feet:
   a. Rotate each foot of the library until it makes contact with the floor.
   b. Rotate each foot an additional 1/4 turn to begin raising the library.
   c. Level the library using a carpenter's level.

2. Remove the antistatic bag covering the library.
3. Remove the shipping foam from around the bottom perimeter of the library (see Figure 13).



1 Foam

Figure 13 Removing the shipping foam from the library perimeter

4. Inspect the library for any damage that may have occurred during shipment.
5. Open the accessory kit.

NOTE: The accessory kit contents vary depending on the configuration ordered. If you believe a part is missing or is damaged, contact your HP sales representative.

---

6. Using the key from the accessories kit, unlock and open the library doors (right front and back):
   a. Lift each door handle straight up and then turn the handle to unlatch each door.

      The key lock for the front library door is located behind the laptop tray (see Figure 14 on page 25). Open the laptop tray by gently pushing on the top of the tray to release it from the cabinet. Support the tray until it is fully opened.

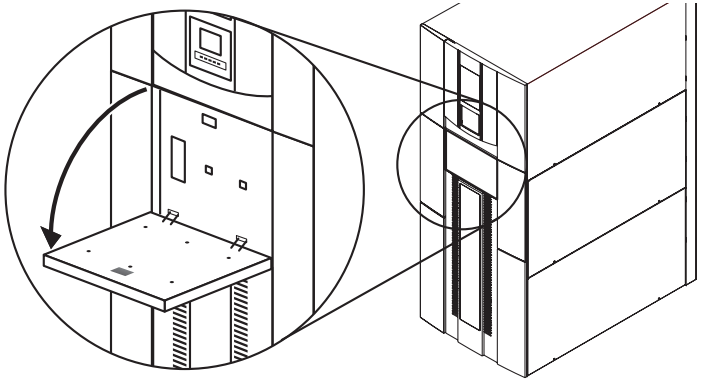
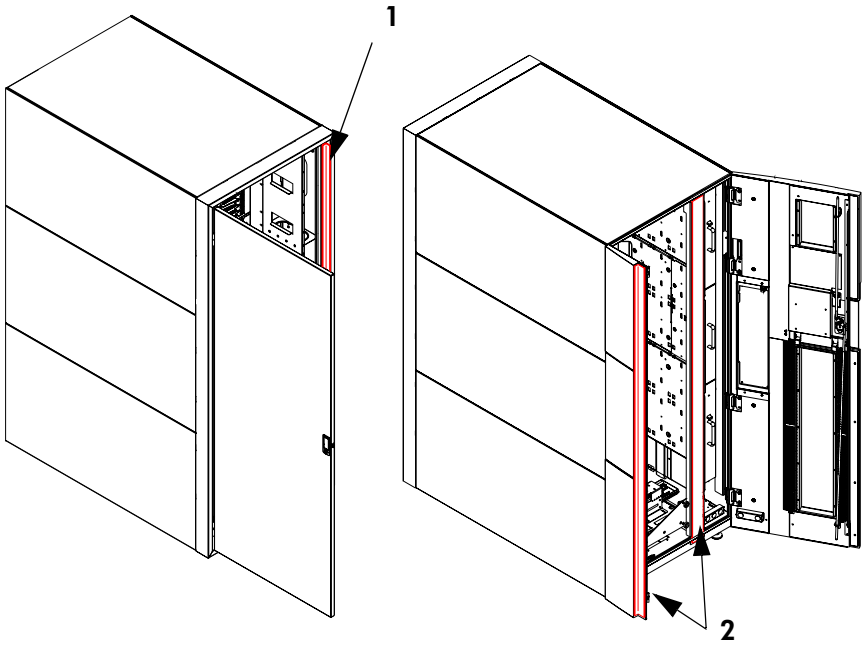


Figure 14 Opening the laptop tray

b. Gently pull each door handle to open the door.

NOTE: The left front door latches to the library frame at the bottom of the door. Release this latch, then open the door.

7. From the front of the library, remove the foam from the Y-axis cover plate, from the left front door, and also from the back door frame (see Figure 15). Store the foam in case you need to relocate the library in the future.



1 Foam on back of library

2 Foam on front of library

Figure 15 Removing the shipping foam

8. Remove the internal library frame restraint from the front of the library, by completing these steps (see Figure 16).
   a. Remove the four 1/4-inch hex nuts securing the two pieces of the restraint.
   b. Remove the 1/4-inch bolts securing the restraint to the top and bottom of the library frame.

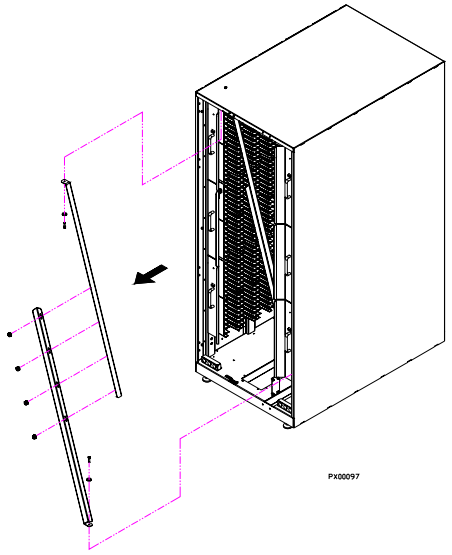
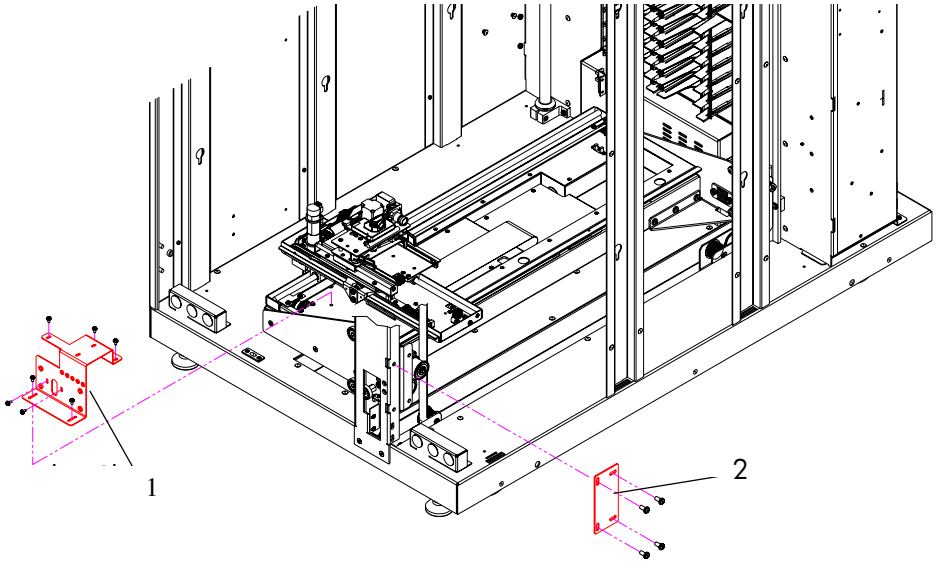


Figure 16 Remove the internal library frame restraint

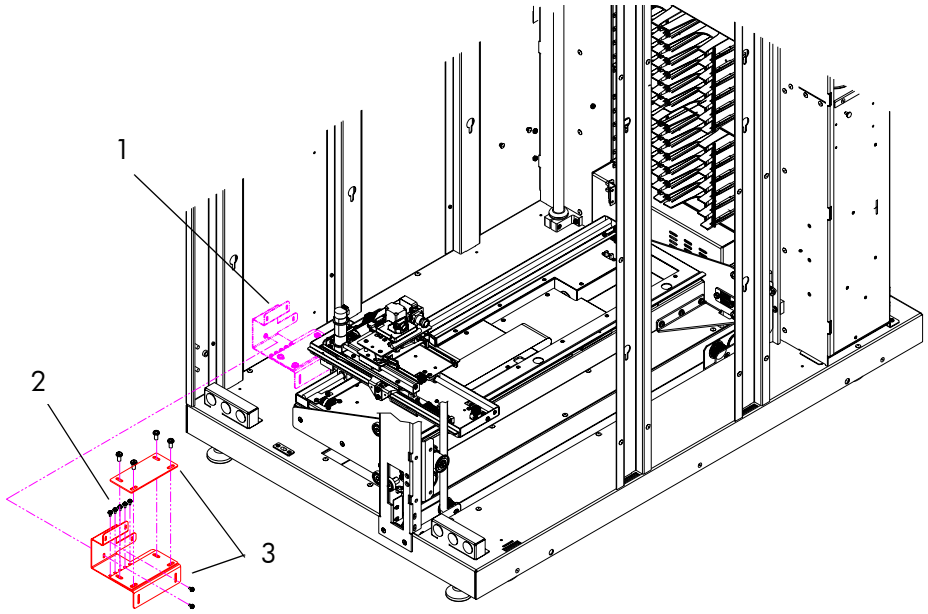
9. From the front of the library, remove two shipping restraints using a #2 Phillips screwdriver (see Figure 17). The vertical axis shipping restraint is secured by four screws, and the robot shipping restraint is secured by seven screws.



1 Robot shipping restraint **2** Vertical axis shipping restraint

Figure 17 Removing the vertical axis and robot shipping restraints

10. Attach the vertical axis shipping restraint to the robot shipping restraint using the four screws removed from the vertical axis shipping restraint in step 9 (see Figure 18).



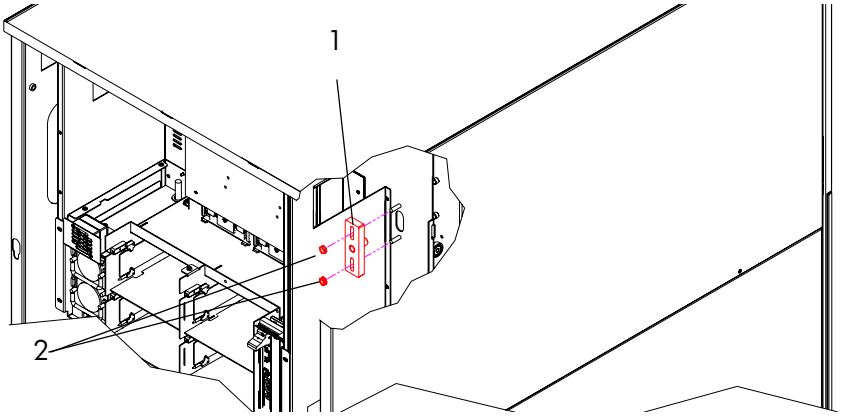
1 Shipping restraints in storage position
2 Spare screws
3 Shipping restraints

Figure 18 Storing the vertical axis and robot shipping restraints

11. Store the five spare screws in the robot shipping restraint as shown in Figure 18.
12. Use the remaining two screws to secure the combined shipping restraints in the library, as shown in Figure 18.

13. From the back of the library use a ratchet with a 7/16-inch socket or a 7/16-inch open-end wrench to remove the two nuts securing the counterweight shipping restraint to the back wall of the library cabinet (see Figure 19).

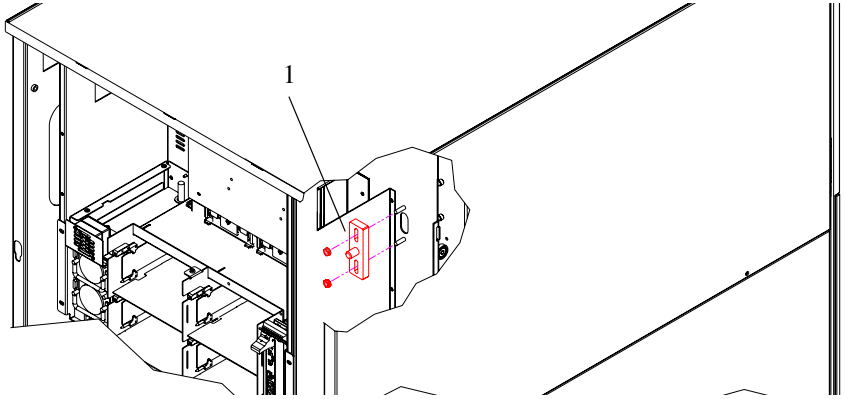
NOTE: HP recommends that you use a 12-inch socket extension.



1 Shipping restraint **2** Nuts

Figure 19 Removing the counterweight shipping restraint

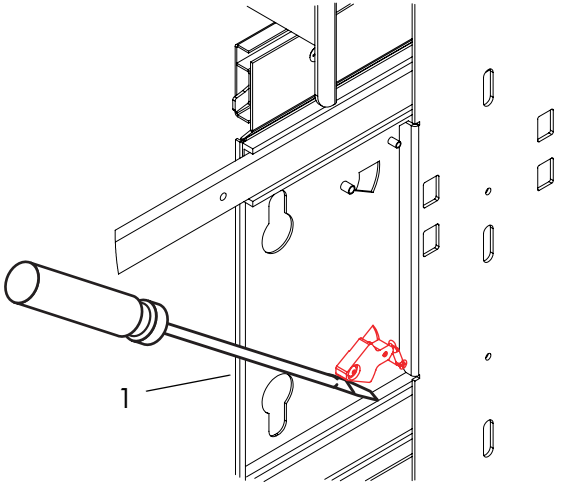
14. Reverse the counterweight shipping restraint so that the pin is facing out. Reinstall it onto the back wall of the library using the two nuts removed in step 13 (see Figure 20).



1 Shipping restraint with retaining pin facing out

Figure 20 Storing the counter weight shipping restraint

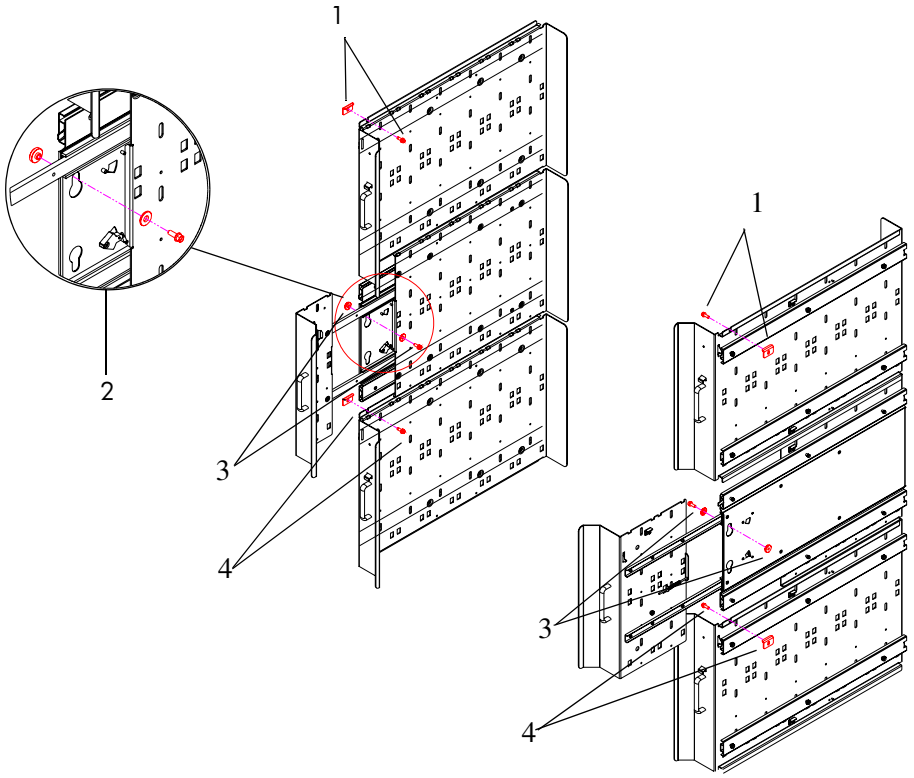
15. Remove the six panel shipping restraints—three on each side of the cabinet.
    a. Use a 1/4-in Phillips screwdriver to press on the bottom of the white load port latching mechanism to disengage it and release the load port (see Figure 21)



1 Front of library

Figure 21 Disengaging the load port latching mechanism (shown from inside the library for clarity)

b. Pull out the load port to expose the middle and lower shipping restraints (see Figure 22).



1	Upper shipping restraint	3	Middle shipping restraint
2	Load port latching mechanism	4	Lower shipping restraint

Figure 22 Removing the panel shipping restraints (panels shown outside of library for clarity)

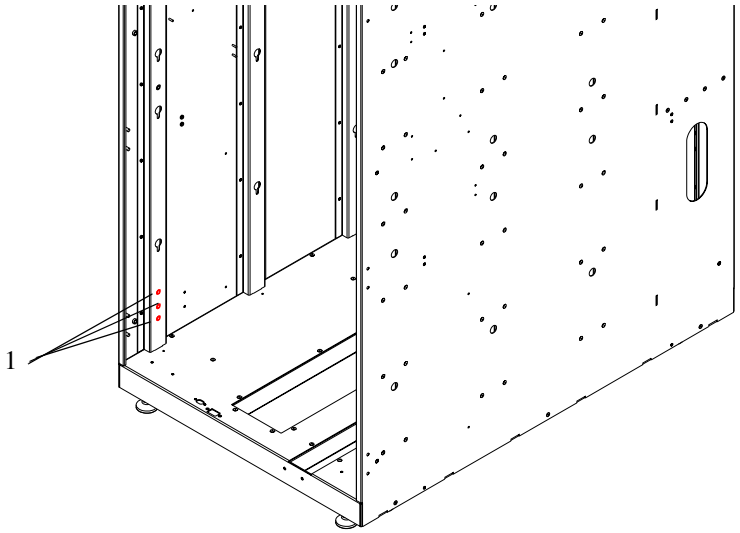
c. Using a #2 Phillips screwdriver, remove the middle and lower panel shipping restraints.

d. Close the load port.

e. Locate the upper shipping restraint above the upper panel (see Figure 22) and remove it using a #2 Phillips screwdriver.

f. Repeat step 15 through step 15 for the panels on the other side of the library cabinet.

16. Store the panel shipping restraint hardware (three sets on each side) on the lower cabinet frame (see Figure 23).



1 Panel restraint storage location (left side shown)

Figure 23 Storing the panel shipping restraints

17. Using the power cables from the accessory kit, connect the library to a grounded power source, using the following procedure.
    a. Connect the cables to the library's main power source.
    b. Route the cables through the cable access hole at the bottom of the cabinet.
    c. Connect the cables to a grounded power source.

NOTE: Do not power on the library. The two breaker switches on the power distribution unit should remain in the off position (to the left) until the library is fully installed.

WARNING! This product can only be used with an HP approved power cord for your specific geographic region. Use of a non-HP approved power cord may result in: 1) not meeting individual country specific safety requirements; 2) insufficient conductor ampacity that could result in overheating with potential personal injury and/or property damage; and 3) an unapproved power cord could fracture resulting in the internal contacts being exposed, which potentially could subject the user to a shock hazard. HP disclaims all liability in the event a non-HP approved power cord is used.

Storing the packaging materials

Store the library packaging materials:

1. Detach the ramp and place on top of the pallet.
2. Fold the shipping bag.
3. Place the shipping bag, foam cap, screws, and other packaging materials on the pallet.
4. Collapse the cardboard box.
5. Place the cardboard box on top of the packaging materials on the pallet.
6. Secure the packaging materials to the pallet and store for future use.

2 Installing the library

This chapter describes the procedures necessary to get your library up and running. Ensure you have the following equipment and accessories available before installing the library.

NOTE: For configure-to-order libraries, kits ship with power cables appropriate to the region instead of US standard power cables.

- For a SCSI environment, you need the following:
  - Two Fibre Channel (FC) cables, for the host/switches, for every e2400-160 interface controller (not included)
  - Four SCSI cables and one Ethernet cable for each e2400-160 Interface Controller
  - One FC cable for the e1200-160 robotics controller card (not included)
  - Power source (see "Power and grounding" on page 13 for power requirements)
- For a native FC environment, you need the following:
  - Four FC drive cables and one Ethernet cable for each e2400-FC 2GB Interface Controller
  - One FC cable for the e1200-160 robotics controller card (not included)
  - Two FC cables for the host/switches (not included)
  - Power source (see "Power and grounding" on page 13 for power requirements)

NOTE: To set up a Cross Linked (CLM) library, ensure that you have the Cross Link Kit and all of the items identified in the ESL E-Series Upgrade to Cross Link poster (part number 395380-001), which is included in the Cross Link Kit. Follow the instructions in this guide for each cabinet, then follow the instructions in the poster to connect the cabinets.

This chapter includes the following sections:

- Cabling the library, page 36
- Powering on the library, page 56

NOTE: Many of the figures in this chapter show a library with SCSI drives and e2400-160 interface controllers. Your library may look different and could include Ultrium 460-FC and 960 drives and e2400-FC 2GB interface controllers. Where information is specific to the interface controller and drive types, figures are provided showing the appropriate hardware.

CAUTION: Before continuing with the installation procedure, ensure the library is powered off and that the main switches on the power distribution unit are turned off (to the left).

Cabling the library

The following sections include procedures for cabling the library. These procedures will be slightly different for the e2400-160 interface controller and Ultrium 460 drives, and the e2400-FC 2GB interface controller and Ultrium 460-FC and 960 drives. The instructions for cabling each type of library are presented below.

△ **CAUTION:** Before cabling the library, ensure the library is powered off and that the main switches on the power distribution unit are turned off (to the left).

Connecting drive cluster cables

To connect the drive cluster cables:

1. Verify that drive cluster power cables are already installed.
2. Connect the I^2C communications cable located to the right of each drive cluster to the I^2C connector on the cluster controller (see Figure 24).

NOTE: I^2C cables are labeled "P0" through "P5" and correspond to the drive clusters. Ensure you use the appropriate cable for the drive cluster being installed (that is, cable "P1" for drive cluster "1").

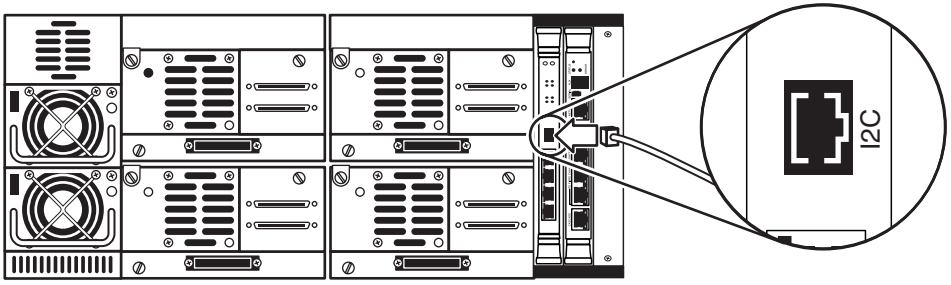
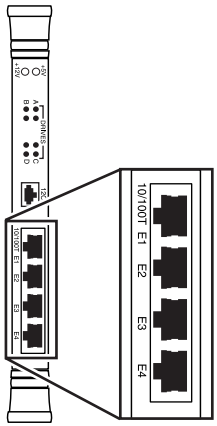


Figure 24 Connecting the I^2C cable

3. Review Table 2 and Table 3 before connecting the drive cluster Ethernet cables. How you connect these cables will depend on how many drive clusters are installed in the library. See the following tables for an overview.

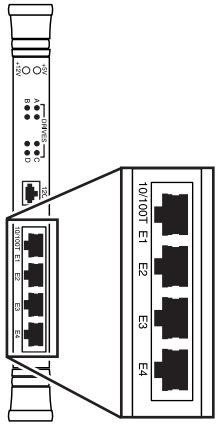
If only one drive cluster is installed in the library, see Table 2. If two or more drive clusters are installed, see Table 3 on page 38.

Table 2 Single drive cluster



Drive cluster	Cluster controller Ethernet port	Ethernet cable
0	E1	Cabinet controller
	E2	Interface Manager card
	E3	Interface controller (e2400-160 or e2400-FC 2GB)
	E4	e1200-160 robotics controller

Table 3 Multiple drive clusters



Drive cluster	Cluster controller Ethernet port	Ethernet cable
0	E1	Cabinet controller
	E2	Interface Manager card
	E3	Interface controller (e2400-160 or e2400-FC 2GB)
	E4	Daisy-chain to lower cluster controller
1	E1	Daisy-chain to upper cluster controller
	E2	e1200-160 robotics controller
	E3	Interface controller (e2400-160 or e2400-FC 2GB)
	E4	Daisy-chain to lower cluster controller
2 - 5	E1	Daisy-chain to upper cluster controller
	E2	Not used
	E3	Interface controller (e2400-160 or e2400-FC 2GB)
	E4	Daisy-chain to lower controller (not used for cluster 5)

4. Connect the 7 ft (2.11 m) black Ethernet cable attached to the cabinet controller at the bottom of the library to Ethernet port "E1" on drive cluster 0 (see Figure 25). The cable is connected to the cabinet controller in the factory and should be hanging in the channel on the right side of the cabinet.

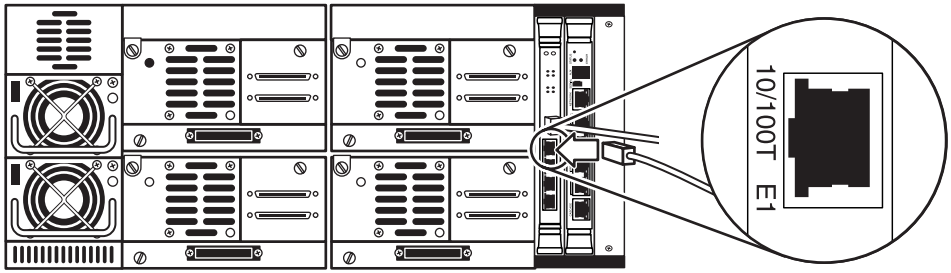


Figure 25 Connecting the cabinet controller Ethernet cable

5. Connect a 1 ft (30.3 cm) white Ethernet cable from the Ethernet port “Network” on the Interface Manager card to Ethernet port “E2” on the cluster controller next to the Interface Manager card (see Figure 26).

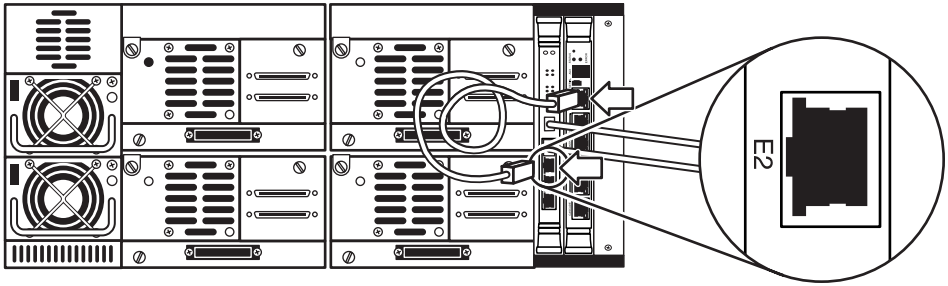


Figure 26 Connecting the Ethernet cable to the Interface Manager card

6. If more than one drive cluster is installed in the library:
   a. Connect the 3 ft (91 cm) green Ethernet cable from Ethernet port "E2" on the cluster controller in drive cluster 1 to the Ethernet port on the robotics controller card (e1200-160) located in the bottom slot of the card cage at the top of the library cabinet (see Figure 27).
   b. Proceed to step 7.

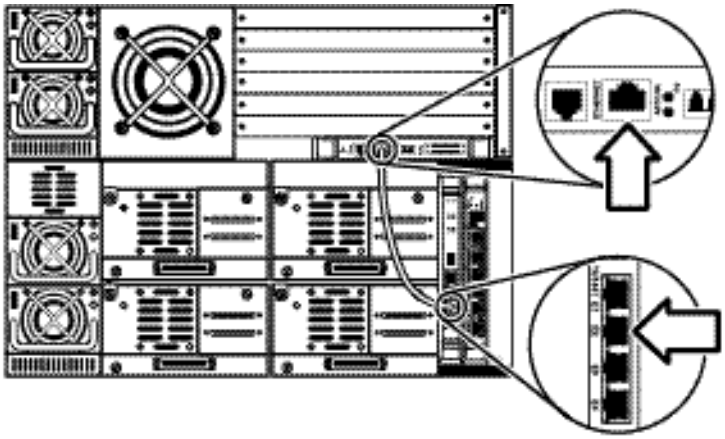


Figure 27 Connecting the Ethernet cable to the robotics controller card (e1200-160)

If only one drive cluster is installed in the library:

a. Connect the 3 ft (91 cm) green Ethernet cable from Ethernet port "E4" on the cluster controller to the Ethernet port on the robotics controller card (e1200-160) located in the bottom slot of the card cage at the top of the library cabinet.
b. Proceed to"Connecting the cabinet controller SCSI cable" on page 42.

7. If more than one drive cluster is installed in the library, add the 1 ft (30.3 cm) gray Ethernet cable from Ethernet port “E4” on the cluster controller in drive cluster 0 to Ethernet port “E1” on the cluster controller in drive cluster 1 (see Figure 28).

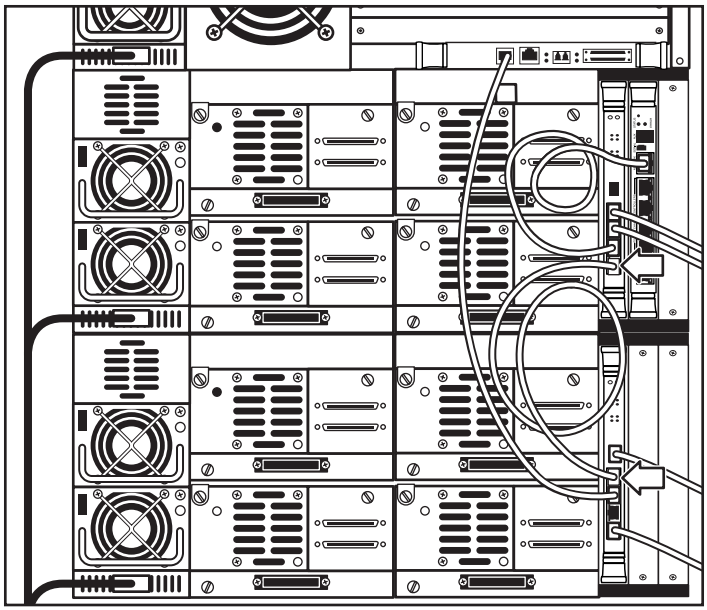


Figure 28 Daisy-chaining drive clusters

Continue daisy-chaining until you have done this procedure for all the drive clusters.

NOTE: When daisy-chaining the drive clusters, do so from Ethernet port “E4” on the top cluster to Ethernet port “E1” on the cluster below. This will help keep the cables clear from the other Ethernet cables on the cluster controller card.

Connecting the cabinet controller SCSI cable

1. Locate the SCSI cable attached to the cabinet controller. If not already attached, attach it now (see Figure 29).

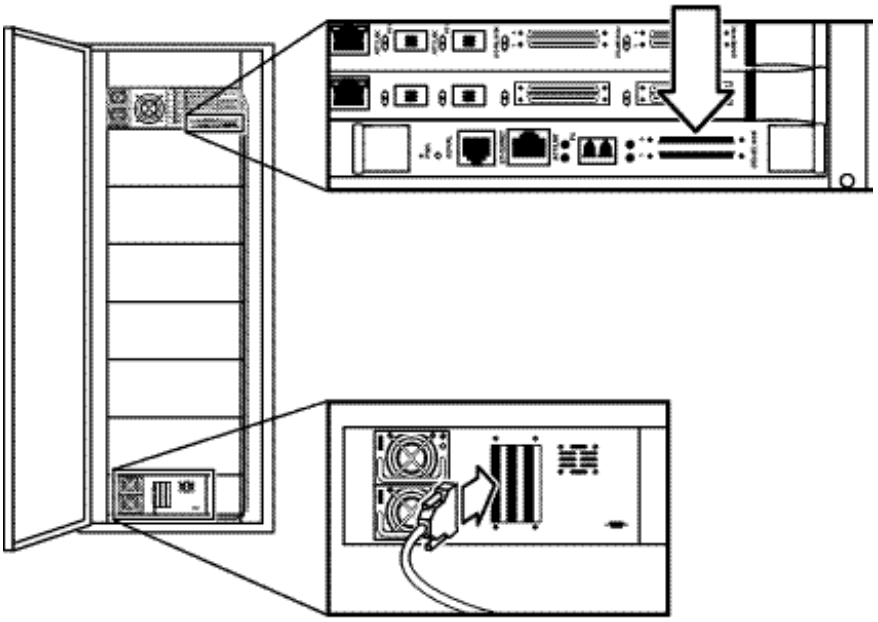


Figure 29 Connecting the robotics controller card (e1200-160)

2. Route the SCSI cable from the cabinet controller up through the cable access holes to the right of the drive clusters.
3. Continue routing through the cluster cable clamp at the top right of the uppermost drive cluster.
4. Connect the other end to Port 0 of the robotics controller card (e1200-160), located in the card cage at the top of the library (see Figure 29).

Connecting drive cables

An e2400-160 interface controller connects to Ultrium 460 or SDLT drives using SCSI cables. An e2400-FC 2GB interface controller connects to Ultrium 460-FC or 960 drives using FC cables. For each controller card and drive type, follow the associated instructions, presented below, to connect the drive cables.

NOTE: HP recommends that you have only one drive type per cluster, and that you complete any partially-filled clusters before adding a new drive type to your library. Cabling and mapping will be easier and more efficient in this case. While combining SCSI and FC drives in a single cluster is supported, it requires the use of two interface controllers, and will result in unused interface controller ports.

If you choose to combine the two drive types, see the mixed interface technical document on the web for important information. Access the Technical documentation page from the ESL E-Series libraries link found on http://www.hp.com/go/tape.

Connecting SCSI cable(s) to an Ultrium 460 or SDLT drive

NOTE: Each e2400-160 interface controller card ships with four SCSI cables, one Ethernet cable, and seven sets of color coded tie wraps. *FC cables are not provided.* These parts will be needed for the following procedures.

NOTE: A step stool may be needed to reach the e2400-160 interface controllers in the card cage located at the top of the library cabinet.

1. Attach a SCSI terminator (provided) to the top SCSI port on each Ultrium 460 or SDLT drive (see Figure 30).

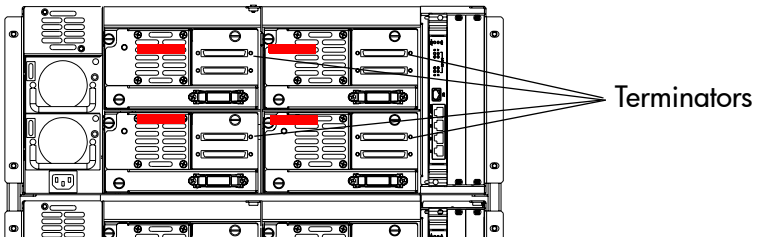


Figure 30 Attaching SCSI terminators to the Ultrium 460 or SDLT drive

2. Remove the top screw from the cable restraint bracket and loosen the bottom one to prepare for cable routing (see Figure 31).

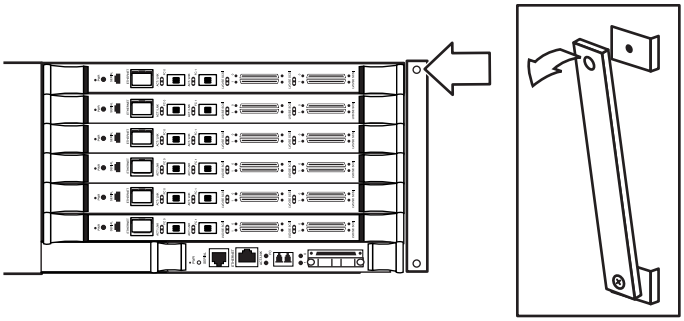


Figure 31 Preparing the cable restraint bracket

3. Connect the SCSI cables from the drives in drive cluster 0 to the e2400-160 interface controller in slot 0 of the card cage (see Figure 32).

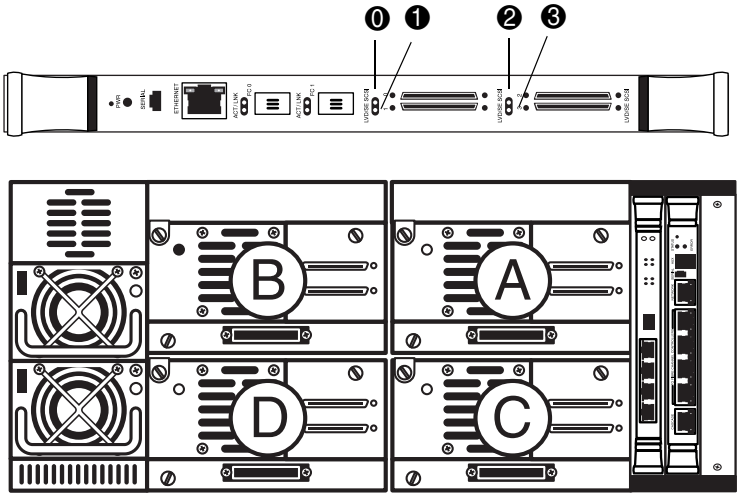


Figure 32 Matching drives and interface controller ports

NOTE: Drive SCSI cables are labeled "A", "B", "C", and "D" on the drive end to indicate the drive location. Drive SCSI cables are labeled "0", "1", "2", and "3" on the interface controller end to indicate the SCSI port location. The most efficient order for making these connections is as follows:

1. Connect a SCSI cable from drive D to port 3 on the interface controller.
2. Connect a SCSI cable from drive B to port 1 on the interface controller.
3. Connect a SCSI cable from drive C to port 2 on the interface controller.
4. Connect a SCSI cable from drive A to port 0 on the interface controller.

a. Gently tighten the screws to secure the cable to the drive port using a slotted screwdriver.

△ **CAUTION:** Do not overtighten the screws that secure the cable to the drive port.

b. Route it through the cable access holes in the sheet metal on the right of the library cabinet.

For drive clusters 0 through 2, dip the excess cable length down into the upper cable access hole. For drive clusters 3 through 5, route the cables up through the lower and upper access holes. Push the first set of cables to the back of the library to create space for additional cables. This will help prevent the cables from becoming tangled. See Figure 33.

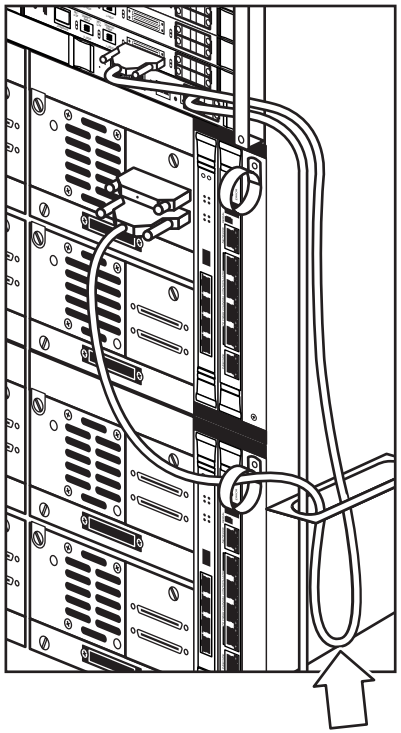


Figure 33 Managing drive SCSI cables

△ **CAUTION:** When routing cables through the cable access holes, be careful not to dislodge or damage the I^2C cable attached to the cluster controller card.

c. Continue routing the cable up through the cable restraint bracket located to the right of the card cage and attach the cable to the corresponding SCSI port on the e2400-160 interface controller.

NOTE: Tighten the SCSI connector screw on the left and then the right for easier installation due to cable interference. Pull the cable toward you to provide more clearance when tightening the right connector screw.

d. Repeat step 3 until all drives are connected.

e. If you have a partially filled cluster, route the SCSI cables for the drives that are not present in preparation for adding them in the future.

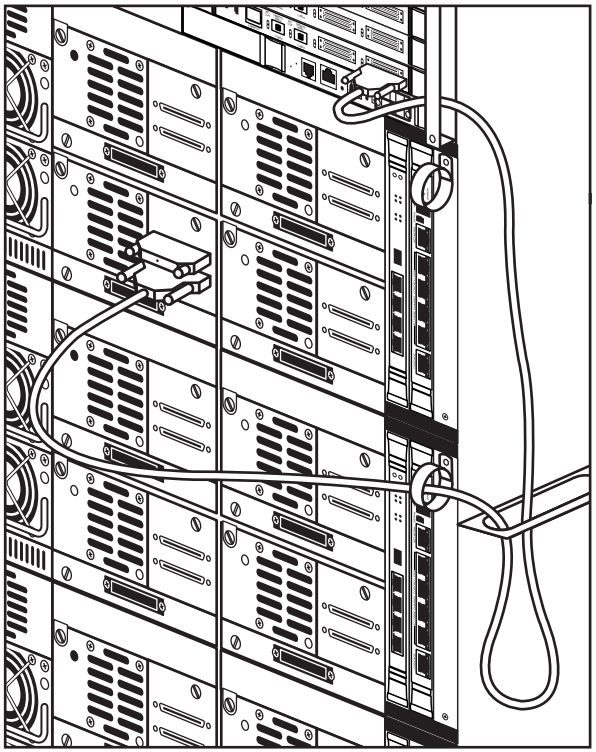
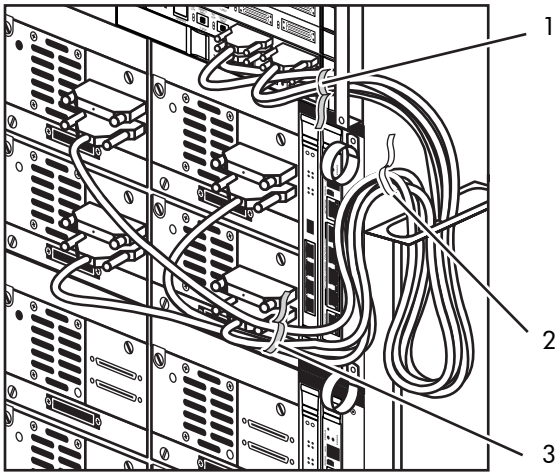


Figure 34 Attaching SCSI cables

5. The e2400-160 interface controller ships with several sets of tie wraps. Each color set should be used to designate a different drive cluster (see Figure 35).



1 Color tie wrap
2 White tie wrap
3 Matching color tie wrap

Figure 35 Attaching the tie wraps

NOTE: Ensure that different colors of tie wraps are used for each drive cluster and e2400-160 interface controller combination. If you have multiple sets of the same color, do not use them within the same library. Colors help identify which SCSI cables are associated with which cluster.

a. Take one colored tie wrap and use it to group the cluster's SCSI cables together on the SCSI port end of the tape drives. Attach it between the cluster cable clamp and the SCSI ports.

b. Take the second tie wrap of the same color and use it to group the cluster's SCSI cables together nearest to the SCSI port end of the e2400-160 interface controllers. Attach it between the cluster cable restraint bracket and the SCSI ports.

c. Take one white tie wrap and use it to group the cluster's SCSI cables together near the cable access holes in the sheet metal on the right of the library cabinet.

NOTE: The other white tie wraps are provided as spares.

6. Route the SCSI cables through the cluster cable clamp on the lower right corner of the cluster frame (see Figure 36).

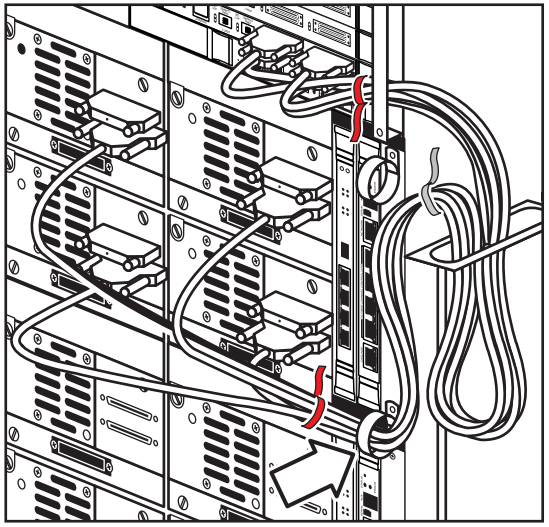


Figure 36 Routing through the cluster cable clamp

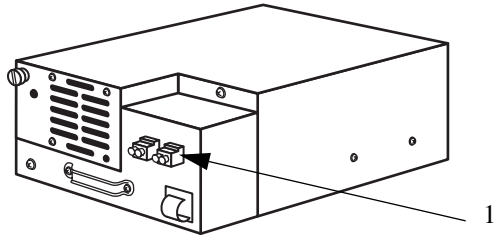
   a. Using a #2 Phillips screwdriver, remove the screw from the clamp.
   b. Route the SCSI cables through the clamp.
   c. Secure the clamp to the cluster frame by replacing the screw.
7. Repeat step 2 through step 6 for each interface controller and drive cluster combination installed in the library.

Connecting FC cable(s) to an Ultrium 460-FC or 960 drive

NOTE: Each e2400-FC 2GB interface controller card ships with four FC cables, one Ethernet cable, and a cable bracket and clamp. These parts will be needed for the following procedures.

NOTE: A step stool may be needed to reach the e2400-FC 2GB interface controllers in the card cage located at the top of the library cabinet.

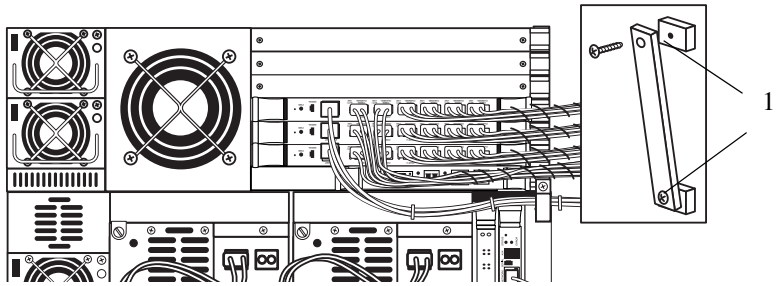
1. Verify that the end caps (supplied) are installed on FC Port B of the Ultrium 460-FC or 960 drive (see Figure 37).



1 Port B with end caps

Figure 37 Verifying installation of FC end caps to the Ultrium 460-FC or 960 drive

2. If your library has only e2400-FC 2GB interface controllers (no e2400-160 interface controllers), replace the existing cable restraint bracket with the new FC cable restraint bracket.
   a. Remove the top and bottom screws from the cable restraint bracket and remove the bracket from the library (see Figure 38).



1 Remove screws to remove the bracket

Figure 38 Removing the existing cable restraint bracket

   b. Position the cable restraint bracket provided with the e2400-FC 2GB interface controller on the card cage where the previous cable restraint bracket was located (see Figure 39).

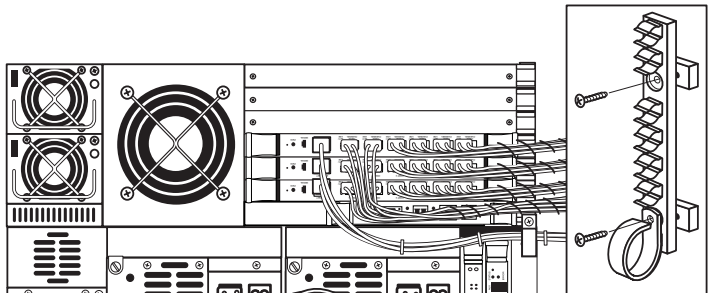


Figure 39 Installing the FC cable restraint bracket

Ensure that the bracket is positioned so that the screw holes in the bracket align with the holes in the card cage.

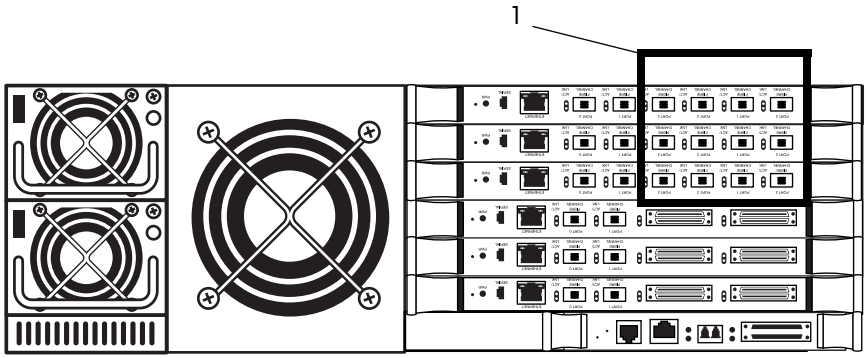
c. Using one of the screws provided, secure the top hole of the bracket to the library card cage.

d. Position the cable clip so that the screw hole is aligned with the lower screw hole on the cable bracket.

e. Using the remaining screw, secure the cable clip and the cable bracket to the library card cage.

NOTE: FC cables are labeled near their connectors to indicate which TD port to connect to each drive. Plan to first connect the FC cables to the interface controller, then route them through the cabinet, and finally, connect them to the drive.

3. Connect all four TD cables to the TD ports on the interface controller (see Figure 40). For each, use the cable appropriately labeled for the port, identified as TD0, TD 1, TD2, or TD3.

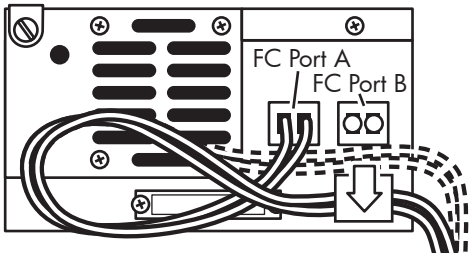


1 TD ports

Figure 40 Connect the TD cables to the TD ports on the interface controller

4. Insert the FC cable bundle into the cable bracket to the right of the card cage.
5. Route the cable through the cable access holes in the sheet metal on the right of the library cabinet.
   - For drive clusters 0 through 2, dip the excess cable length down into the upper cable access hole.
   - For drive clusters 3 through 5, route the cables up through the lower and upper access holes.
   - Push the first set of cables to the back of the library to create space for additional cables. This will help prevent the cables from becoming tangled.
6. Using a #2 Phillips screwdriver, remove the screw from the clamp located on the lower right side of the drive cluster.
7. Route the FC cable bundle through this clamp.
8. Secure the clamp to the cluster frame by replacing the screw.
9. Remove FC port A end caps from each drive that is present.

10. For each drive, attach the FC cables to port A only.
    Use the cable appropriately labeled as A, B, C, or D for the corresponding drive.
11. Insert the FC cable into the cable clip for the drive (see Figure 41).



1 FC port A 2 FC port B

Figure 41 Inserting the FC cable in the drive cable clip

△ **CAUTION:** To avoid damaging the FC cable, do not pinch or sharply bend the cable. Allow a radial bend when attaching the FC cable to the cable clip.

12. Gather the FC cables for all drives near the drive handle on the lower right drive in the cluster, and attach the cables to the drive handle using the tie wrap provided.
    This will help keep the FC cables clear of the drive cluster below.

Connecting drive cluster Ethernet cable(s)

1. Connect an Ethernet cable to the cluster controller card at port "E3".
2. Route the cable through the cable access holes on the right side of the library.
3. Connect the cable to the Ethernet port on the corresponding interface controller (see Figure 42). For example, connect the cluster controller card in drive cluster 0 to the interface controller in slot 0 of the card cage.

NOTE: See Table 2 and Table 3 on page 38 for an overview of drive cluster Ethernet cabling.

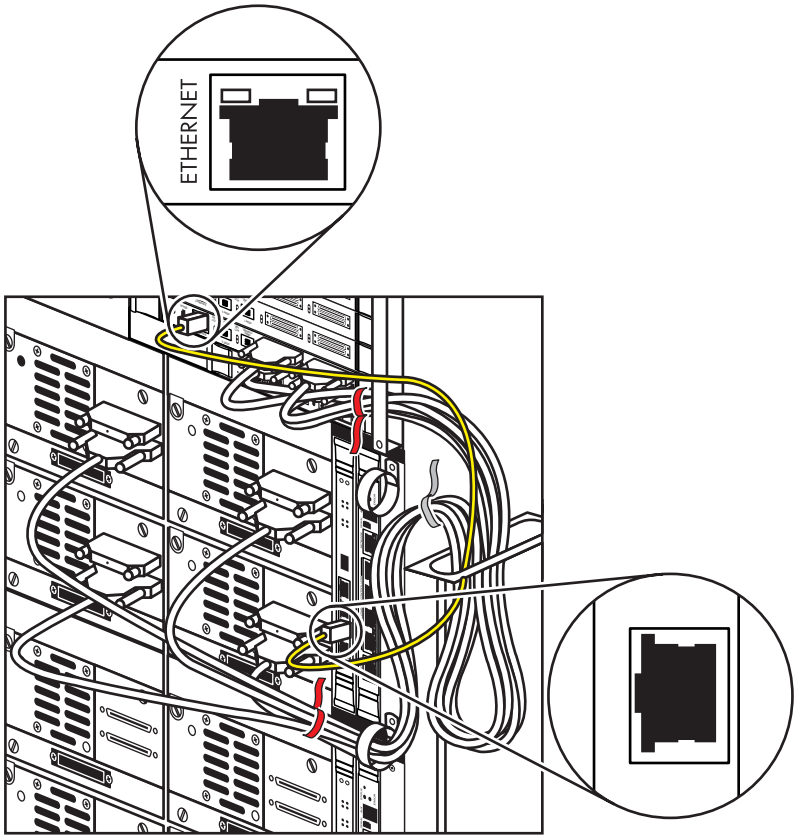


Figure 42 Connecting Ethernet cable to the e2400-160 interface controller

NOTE: If necessary, loop the cable and bind it with a spare white tie wrap in the cable channel to help take up any slack.

4. Repeat step 1 through step 3 for each drive cluster and interface controller combination.

5. Route the Ethernet cables through the cable clamp.
   - If you have SCSI drive cables, open the cable clamp located on the upper right side of the top drive cluster by removing the screw. Route the Ethernet cables through the cable clamp, and then reattach the screw to secure it to the card cage (see Figure 43).

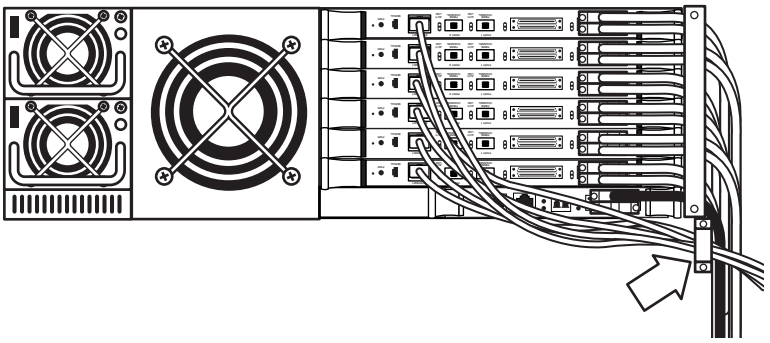


Figure 43 Routing Ethernet cables through the SCSI (and FC) cable clamp

   - If you have FC drive cables only (no SCSI drive cables), open the cable clamp located at the base of the cable bracket on the right of the card cage by removing the screw (see Figure 44). Route the Ethernet cables through the cable clamp, then reattach the screw to secure it and the cable bracket to the card cage.

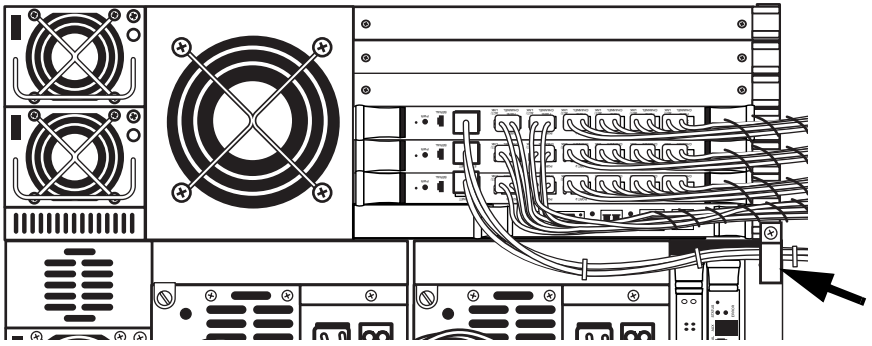


Figure 44 Routing Ethernet cables through the FC-only cable clamp

Connecting FC cables for HBA

1. Connect two FC cables (not provided) from the interface controllers, through an access hole in the library cabinet, and to a switch or Host Bus Adapter (HBA) (see Figure 45).
   a. Attach a FC cable (one per every two drives) to the FC0 and FC1 ports on the interface controller. If you are only attaching one cable, attach it to port FC0.
   b. Attach another FC cable to the e1200-160 robotics controller card located below the interface controller(s) in the card cage.
   c. Route the cable(s) through access holes on the top or bottom of the library cabinet.
      — If routing through the top of the cabinet, use a Phillips screwdriver to remove the plate covering the top access hole.
      — If routing through the bottom of the library cabinet, route the cable(s) down the left side of the library next to the power cables.
   d. Route the FC cable(s) to a switch or an HBA.

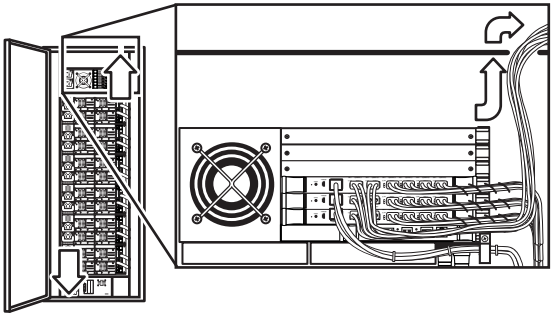


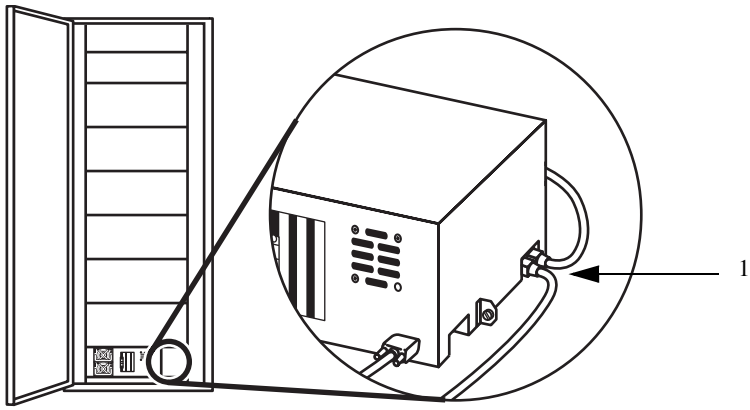
Figure 45 Connecting FC cables

NOTE: You can connect directly to an HBA or to a switch. The default is to connect to a switch. For detailed procedures for connecting to an HBA, please see *HP StorageWorks Interface Manager and Command View TL user guide*.

Connecting the cabinet controller LAN cable

1. Route your LAN Ethernet cable up through the bottom of the library cabinet through the cable access hole on the right side as you face the back of the library.
2. Attach the cable to the front Ethernet port on the cabinet controller located at the base of the library. The ports are on the right side toward the back of the cabinet controller (see Figure 46).

NOTE: There are two Ethernet ports on the right side of the cabinet controller. One port is for the cable that routes to the service port behind the laptop tray on the front of the library. This cable is factory installed. The second port should be vacant and is available for connecting to your local network.

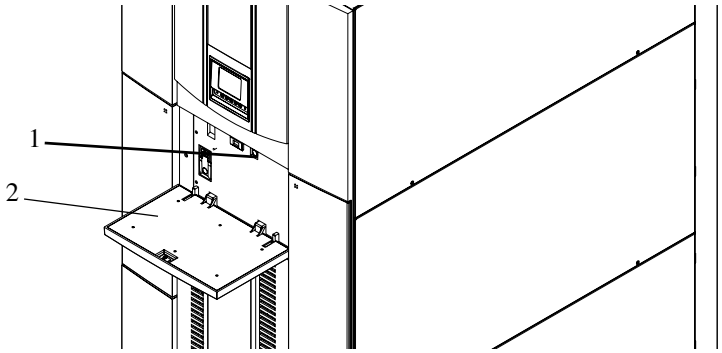


1 Ethernet ports

Figure 46 Connecting the cabinet controller LAN cable

Powering on the library

You are now ready to power on the library and ensure that all components are functioning properly (see Figure 47).



1 Power button **2** Laptop tray

Figure 47 Powering on the library

NOTE: Normally, all library doors should be closed before powering on the library; however, to confirm that all components are functioning properly after the initial installation, leave the back library door open.

1. Power on all components of the library
2. Power on the library by moving the main switches on the power distribution unit to the on (right) position.
3. Press the power button located behind the laptop tray on the front of the library.
4. After several minutes, verify that the current state of the library appears in the `System State` display on the front panel ("`System On-line`" or "`System Off-Line`").
5. Make sure that LEDs on the power supplies, tape drives, terminators, the interface manager card, and controllers indicate a normal (green) state.
6. Close the library's back door and continue to Preparing tape cartridges, page 57 in the next chapter.

3 Loading tape cartridges

Before configuring the library you need to load the appropriate tape cartridges. For information about tape cartridges needed for each tape drive type, please see *HP StorageWorks Tape Libraries Media and Bar Code Labels* flyer.

This chapter includes the following sections:

- Preparing tape cartridges, page 57
- Library storage locations and slot numbering, page 62

NOTE: Tape cartridges and cleaning cartridges must be ordered specifically. They are not included in the purchase of an ESL E-series Tape Library.

Preparing tape cartridges

△ **CAUTION:** Handle tape cartridges with care. Do not drop or mishandle them, or place them near sources of electromagnetic interference. Rough handling can damage the cartridge, making it unusable and potentially hazardous to the tape drives.

Labeling tape cartridges

△ **CAUTION:** The misuse and misunderstanding of bar code technology can result in backup and restore failures. To ensure that your bar codes meet HP's quality standards, always purchase them from an approved supplier and never print bar code labels yourself. For more information, see the order form provided with the library, as well as the *Bar Code Label Requirements, Compatibility and Usage* white paper available from http://www.hp.com/support.

NOTE: For information on ordering tape cartridges and bar code labels, see the ordering sheet that shipped with your library.

Attaching a bar code label to each tape cartridge enables the library and application software to identify the cartridge quickly, thereby speeding up inventory time. Make it a practice to use bar code labels on your tape cartridges. Your host software may need to keep track of the following information and the associated bar code:

- Date of format or initialization
- Tape's media pool

- Data residing on the tape
- Age of the backup
- Errors encountered while using the tape (to determine if the tape is faulty)

Ultrium bar code labels

Ultrium cartridges have a recessed area located on the face of the cartridge next to the write-protect switch. Use this area for attaching the adhesive-backed bar code label (see Figure 48). Do not apply labels onto the cartridge except in this designated area.

△ **CAUTION:** The bar code label should be applied as shown in Figure 48 with the alphanumeric portion facing the hub side of the cartridge. Never apply multiple labels onto a cartridge, because extra labels can cause the cartridge to jam inside a tape drive.

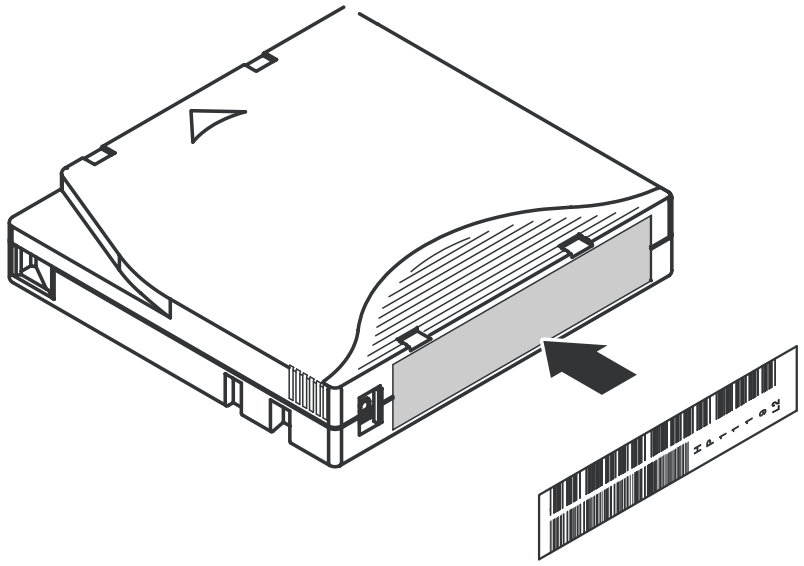


Figure 48 Attaching an Ultrium bar code label

For successful operation of your tape library, place the bar code label *entirely* within the recessed area, ensuring that no part of the label is outside of it (see Figure 49).

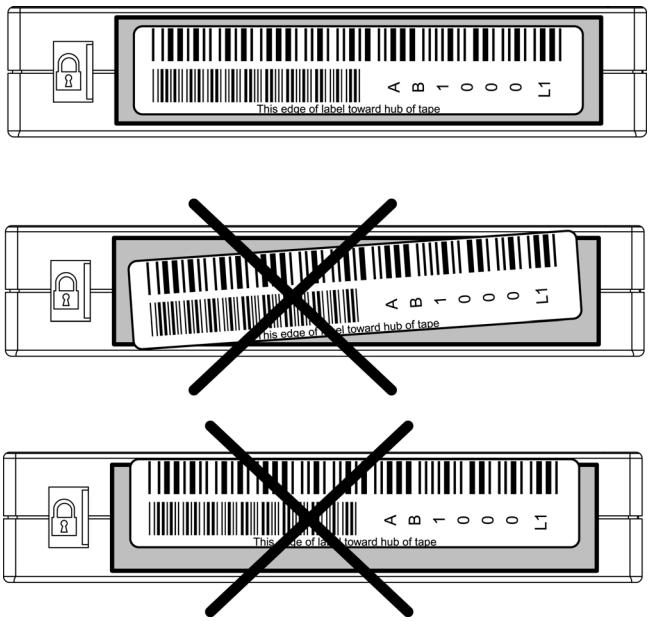


Figure 49 Proper Ultrium bar code label placement

SDLT bar code labels

SDLT cartridges have a front slide slot located on the face of the cartridge next to the write-protect switch (see Figure 50). Use this slot for inserting the bar code label by sliding it into the slot.

△ **CAUTION:** Do not apply labels onto the top, bottom, sides, or back of the cartridge as this may cause damage to the tape drive, or interfere with reliable operation.

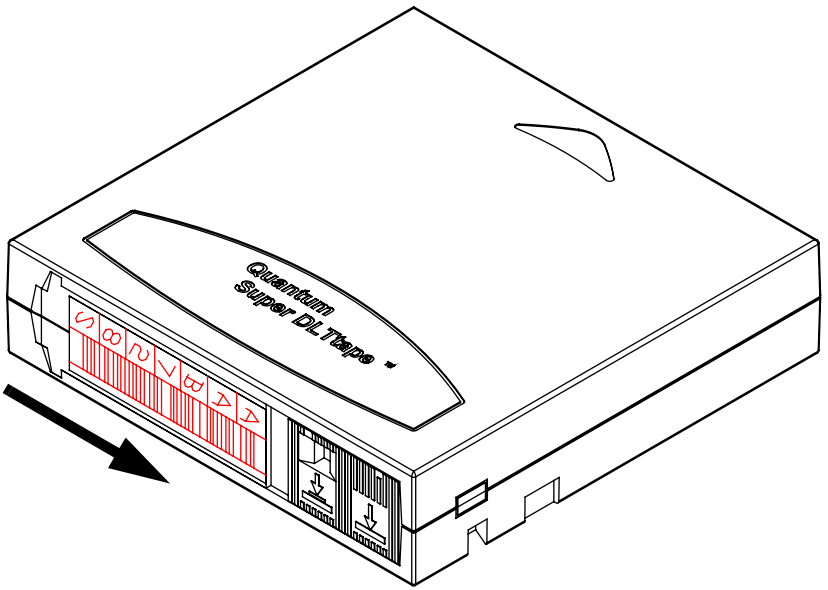


Figure 50 Inserting an SDLT bar code label

Media label identifiers

Be sure to use the proper bar code labels for your drive technology. Table 4 lists the identifier that is found at the end of 7- or 8-character SDLT and Ultrium bar code labels.

Table 4 Media label identifiers

Cartridge type	Density	Label identifier
SDLT	110/220 GB	S or S1
SDLT	160/320 GB	S or S2
SDLT 600	300/600 GB	2
Ultrium 230	100/200 GB	L1
Ultrium 460	200/400 GB	L2
Ultrium 960	400/800 GB	L3

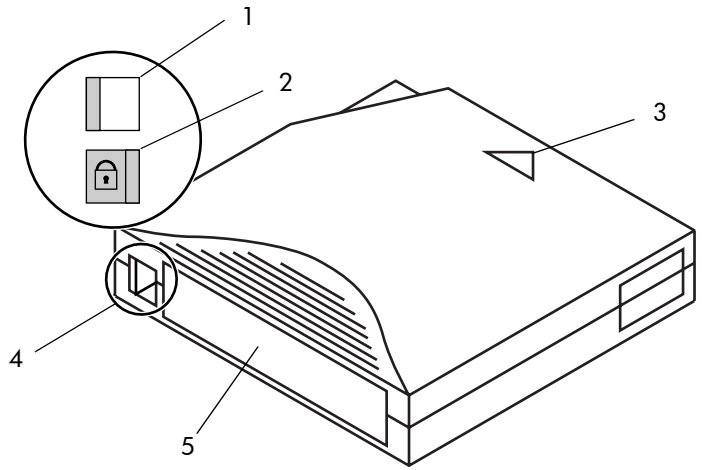
△ **CAUTION:** To ensure that your bar codes meet HP's quality standards, always purchase them from an approved supplier and never print bar code labels yourself. For more information, see the order form provided with the library, as well as the *Bar Code Label Requirements, Compatibility and Usage* white paper available from http://www.hp.com/support.

Setting the write-protect switch

Each tape cartridge has a sliding write-protect switch. This switch determines whether new data can be written to the tape cartridge (write-enabled) or whether data on the tape cartridge is protected from being erased or overwritten (write-protected).

Write-protecting Ultrium tape cartridges

By moving the switch to the left (Figure 51), the tape cartridge is write-enabled. By moving the switch to the right, the tape cartridge is write-protected.

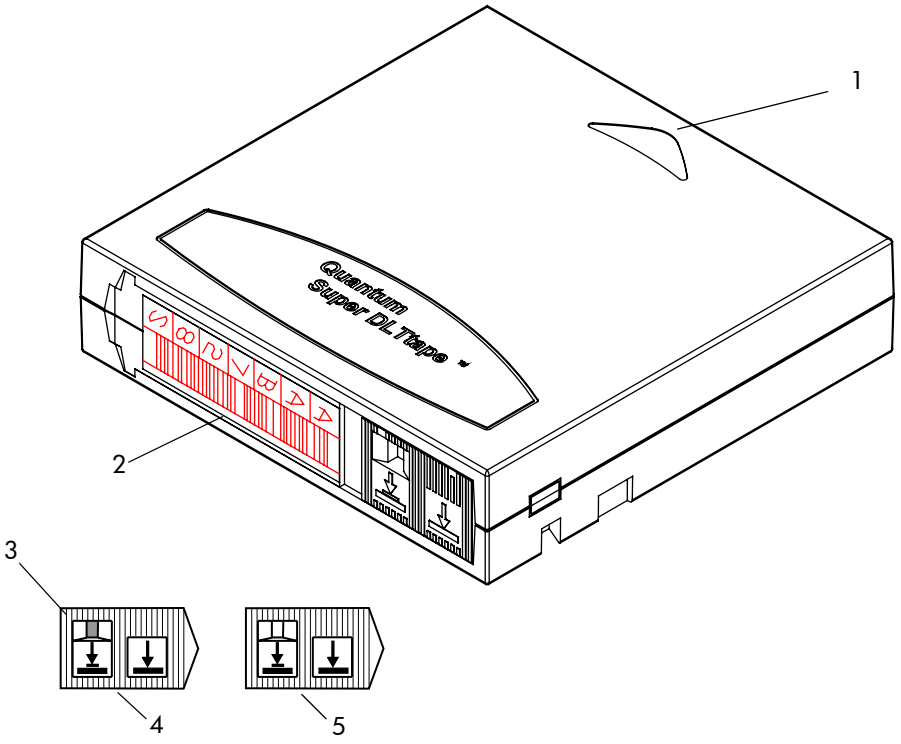


1 Write-enabled
2 Write-protected
3 Insertion arrow
4 Write-protect switch
5 Bar code label

Figure 51 Write-protecting Ultrium tape cartridges

Write-protecting SDLT tape cartridges

By moving the switch to the left (Figure 52), the tape cartridge is write-protected (orange indicator is visible). By moving the switch to the right, the tape cartridge is write-enabled (orange indicator is not visible).



1 Insertion arrow
2 Barcode label
3 Orange window
4 Slide left to write protect
5 Slide right to write enable

Figure 52 Write-protecting SDLT tape cartridges

Library storage locations and slot numbering

The HP StorageWorks ESL E-Series tape library is an automated tape storage and retrieval library that may consist of up to 24 tape drives and up to 718 Ultrium tape cartridges, or 636 SDLT tape cartridges.

The library stores tape cartridges in the following locations:

- Left panels
- Right panels
- Back panels

NOTE: The number of tape cartridge slots depends on the drive technology used. The number of back panel slots depends on how many drive clusters are in the library. See "Ultrium library" on page 67 and "SDLT library" on page 69 for tape cartridge quantity information. Also, designating the load ports as active reduces the capacity by the number of slots in the load port.

To slide the slot panels out of the cabinet, press the slot panel latches down and pull the slot panel out of the cabinet (see Figure 53 and Figure 54).

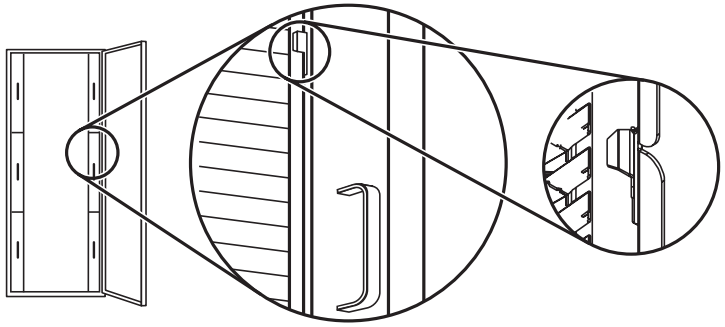


Figure 53 Releasing the slot panel latch on a middle load port

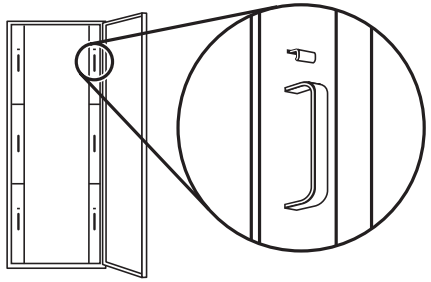
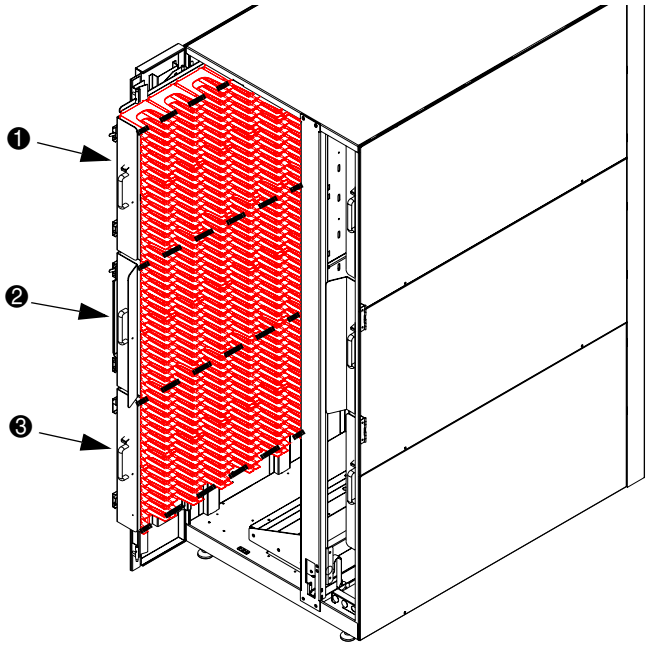


Figure 54 Releasing the slot panel latch on an upper or lower load port

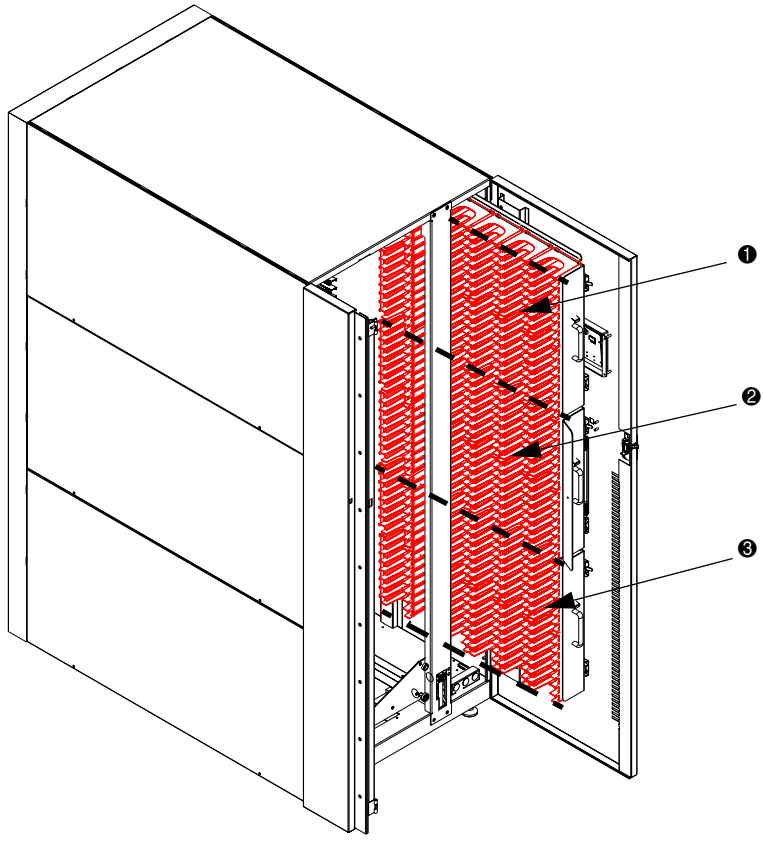
Figure 55 shows the left panel bins. Begin with panel 1 and load top to bottom and left to right. Continue with panel 2 in the same manner, and finally, panel 3.



1 Panel 1
2 Panel 2
3 Panel 3

Figure 55 Bin shelf numbering, left panels

Figure 56 shows the right panel bins. Begin with panel 4 and load top to bottom and left to right. Continue with panel 5 in the same manner, and finally, panel 6.

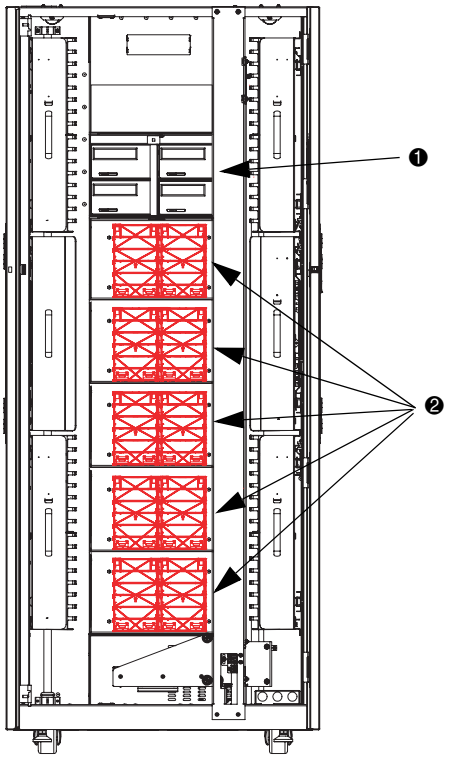


1 Panel 4
2 Panel 5
3 Panel 6

Figure 56 Bin shelf numbering, right panels

Figure 57 shows the back panel bins. With Ultrium drives, each column has seven slots; with SDLT drives, each column has six slots. Begin at the top, with the panel corresponding to cluster 0, and load top to bottom and left to right. Continue loading each sequential cluster, top to bottom and left to right.

NOTE: The number of slots located in the back panel varies with the number of drive clusters installed.



1 Cluster 0 2 Back panel bins

Figure 57 Bin shelf numbering, back panel (SDLT shown)

Ultrium library

Table 5 shows storage capacity in Ultrium-only libraries with removable magazines.

Table 5 Ultrium library storage elements

Number of drives	Load ports used	Load port capacity	User slots
1 - 4	0	0	712
1 - 4	Left only	16	696
1 - 4	Right only	32	680
1 - 4	Both	48	664
5 - 8	0	0	698
5 - 8	Left only	16	682
5 - 8	Right only	32	666
5 - 8	Both	48	650
9 - 12	0	0	684
9 - 12	Left only	16	668
9 - 12	Right only	32	652
9 - 12	Both	48	636
13 - 16	0	0	670
13 - 16	Left only	16	654
13 - 16	Right only	32	638
13 - 16	Both	48	622
17 - 20	0	0	656
17 - 20	Left only	16	640
17 - 20	Right only	32	624
17 - 20	Both	48	608
21 - 24	0	0	642
21 - 24	Left only	16	626
21 - 24	Right only	32	610
21 - 24	Both	48	594

NOTE: Slots in enabled load ports cannot be used as data slots.

Table 6 shows storage capacity in Ultrium-only libraries with fixed magazines.

Table 6 Ultrium library storage elements

Number of drives	Load ports used	Load port capacity	User slots
1 - 4	0	0	718
1 - 4	Left only	18	700
1 - 4	Right only	36	682
1 - 4	Both	54	664
5 - 8	0	0	704
5 - 8	Left only	18	686
5 - 8	Right only	36	668
5 - 8	Both	54	650
9 - 12	0	0	690
9 - 12	Left only	18	672
9 - 12	Right only	36	654
9 - 12	Both	54	636
13 - 16	0	0	676
13 - 16	Left only	18	658
13 - 16	Right only	36	640
13 - 16	Both	54	622
17 - 20	0	0	662
17 - 20	Left only	18	644
17 - 20	Right only	36	626
17 - 20	Both	54	608
21 - 24	0	0	648
21 - 24	Left only	18	630
21 - 24	Right only	36	612
21 - 24	Both	54	594

NOTE: Slots in enabled load ports cannot be used as data slots.

SDLT library

Table 7 shows storage capacity in an SDLT-only library with removable magazines.

Table 7 SDLT library storage elements

Number of drives	Load ports used	Load port capacity	User slots
1 - 4	0	0	630
1 - 4	Left only	14	616
1 - 4	Right only	28	602
1 - 4	Both	42	588
5 - 8	0	0	618
5 - 8	Left only	14	604
5 - 8	Right only	28	590
5 - 8	Both	42	576
9 - 12	0	0	606
9 - 12	Left only	14	592
9 - 12	Right only	28	578
9 - 12	Both	42	564
13 - 16	0	0	594
13 - 16	Left only	14	580
13 - 16	Right only	28	566
13 - 16	Both	42	552
17 - 20	0	0	582
17 - 20	Left only	14	568
17 - 20	Right only	28	554
17 - 20	Both	42	540
21 - 24	0	0	570
21 - 24	Left only	14	556
21 - 24	Right only	28	542
21 - 24	Both	42	528

NOTE: Slots in enabled load ports cannot be used as data slots.

Table 8 shows storage capacity in an SDLT-only library with fixed magazines.

Table 8 SDLT library storage elements

Number of drives	Load ports used	Load port capacity	User slots
1 - 4	0	0	636
1 - 4	Left only	16	620
1 - 4	Right only	32	604
1 - 4	Both	48	588
5 - 8	0	0	624
5 - 8	Left only	16	608
5 - 8	Right only	32	592
5 - 8	Both	48	576
9 - 12	0	0	612
9 - 12	Left only	16	596
9 - 12	Right only	32	580
9 - 12	Both	48	564
13 - 16	0	0	600
13 - 16	Left only	16	584
13 - 16	Right only	32	568
13 - 16	Both	48	552
17 - 20	0	0	588
17 - 20	Left only	16	572
17 - 20	Right only	32	556
17 - 20	Both	48	540
21 - 24	0	0	576
21 - 24	Left only	16	560
21 - 24	Right only	32	544
21 - 24	Both	48	528

NOTE: Slots in enabled load ports cannot be used as data slots.

Mixed media library

An Ultrium or SDLT library at firmware level 2.0 or greater, can be converted into a mixed-media library by exchanging existing panel 1; panels 1 and 2; or panels 1, 2, and 3 for the type of media panel not yet in the library. Mixed-media libraries require library partitioning, with one media type per partition. See *HP StorageWorks Interface Manager and Command View TL users guide* to learn about and use library partitioning. Removable magazines are also required in a mixed-media library.

These requirements impact library operations in the following ways:

- If you convert panel 1 only to a new media type, neither load port can be used to insert or remove media from that panel. Because the left and right load ports are on panels 2 and 5, they must have the same media type as the rest of panels 2 and 5.
- If panels 1 and 2 (or 1, 2, and 3) are converted to a new media type, the left load port can be used to insert or remove media from the converted panels. The right load port is used to insert or remove media from the existing panels.
- The type of media added to your library is on the left side of the library only; therefore, the additional media type has only one column of load port capacity, and the existing media type has two columns of load port capacity.

These are important when determining the library storage capacity. Storage capacity in a mixed-media library depends on the quantity of panels exchanged, the location of media types you are using, whether the load ports are enabled, and the number of drives in the library.

NOTE: In order to use mixed media, the library must be at firmware revision level 2.0 or greater. Update the firmware before installing mixed media in the library.

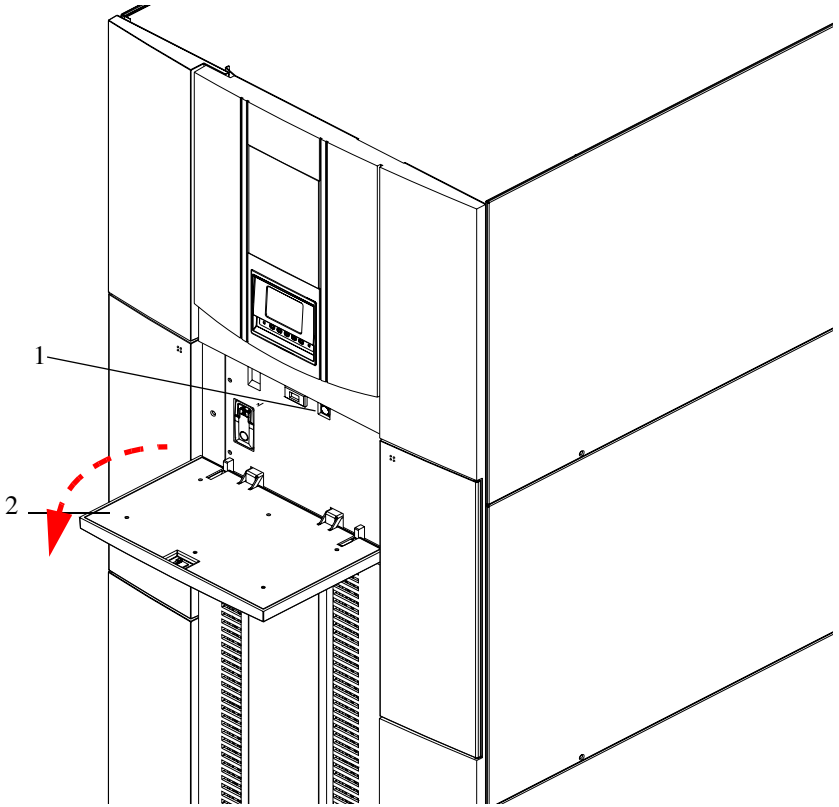
4 Configuring the library

This chapter includes the following sections:

- Configuring the IP address, page 73

Configuring the IP address

1. Make sure the library is powered up. If not:
   a. Press the power button located behind the laptop tray on the front of the library (see Figure 58.
   b. After several minutes, verify that the current state of the library appears in the `System State` display on the front panel ("`System On-line`" or "`System Off-Line`").



1 Power button 2 Laptop tray

Figure 58 Powering up the library

2. Take the library off-line, if it is not off-line already.
   a. Press the **Ops** button on the OCP to access the `Operations` screen.
   b. Select `Cabinet`.
   c. Use the Up and Down arrows to take the library off-line.
3. When the library completes the boot up sequence and the OCP is active, press `Menu` from the `Home` screen.
   The OCP displays the `Menu` screen (see Figure 59).

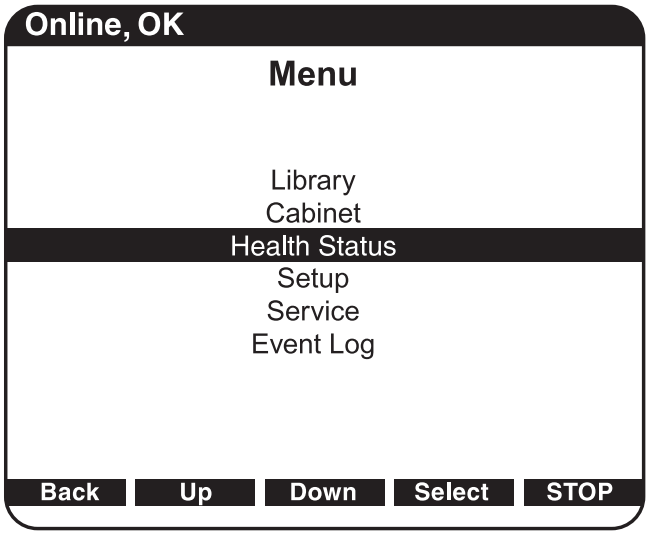


Figure 59 Menu screen

4. From the `Menu` screen, use the Up and Down arrows to highlight `Setup` and press **Select**.
5. The library prompts you for a password. Enter the 6 digit password.

NOTE: The default password is 001122.

The `Setup` screen displays (see Figure 60).

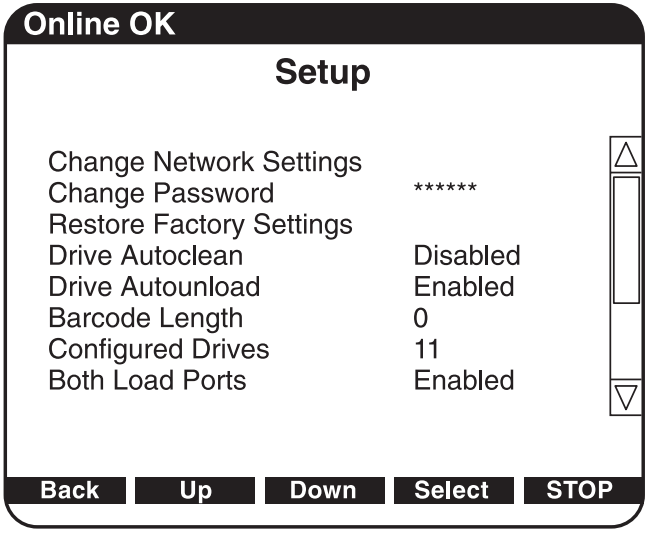


Figure 60 Setup screen

The `Setup` screen displays the following information:

- Change Network Settings
- Change Password
- Restore Factory Settings
- Drive Autoclean
- Drive Autounload
- Barcode Length
- Configured Drives
- Both Load Ports
- Left Load Port (##)
- Right Load Port (##)

NOTE: Load port slot numbers will be different for each drive technology (Ultrium is 18 and 36, and SDLT is 16 and 32).

6. To edit the setup information, use the Up and Down arrows to highlight the section and press **Select**.
   - To view or change network settings, highlight **Network Settings** and press **Select**.
     - To set the IP address, subnet mask, and gateway, use the Up and Down buttons to select the appropriate number and press **Select** to accept.
     - To enable/disable DHCP, use the Up and Down buttons to toggle between enable/disable. Press **Select** to accept the setting. If your library is not connected to a network that uses a DHCP server to assign IP information, disable this function.
   - To change the password, use the Up and Down buttons to select **Change Password** and press **Select**. To change the password, enter a 6-digit password using the numbers provided on the OCP. Press **Select** to accept the new password. When prompted, re-enter the password to confirm.
   - To enable autoclean, use the Up and Down buttons to select **Autoclean** and press **Select**. The default is disabled.
   - To enable or disable autounload, use the Up and Down buttons to select **Autounload** and press **Select**, then use the Up and Down buttons to choose **Enable** or **Disable**, then press **Select**.
   - To set the barcode length, use the Up and Down buttons to select **Barcode Length** and press **Select**. To set the barcode length, use the Up and Down buttons to display the appropriate number (from 1 to 9, or back to 0), then press **Select**. Default barcode length is 0, which means that a barcode of any length will be accepted.
   - To configure the number of tape drives in the cabinet, use the Up and Down arrows to select the number of drives and press **Select**.

△ **CAUTION:** If you have a partially filled drive cluster, change the number of tape drives to reflect the number of installed drives. For example, a cluster with two drives will show as four drives total with two being inactive. Use the **Setup** menu to change **Configured Drives** to **2** instead of **24**, which is the default. This helps avoid potential issues with your application software.

   - To enable both load ports, use the Up and Down arrows to select **Both Load Ports**, then press **Select**. The default is disabled.
   - To enable the left load port, use the Up and Down arrows to select **Left Load Port (##)**, then press **Select**. The default is disabled.
   - To enable the right load port, use the Up and Down arrows to select **Right Load Port (##)**, then press **Select**. The default is disabled.
7. When you are finished viewing/editing the setup information, press **Back** to return to the `Menu` screen.
8. After making configuration changes, the OCP may prompt you to reboot the library. If so, reboot the library at this time.

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